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A STUDY OF THE RESPONSES OF BLIND AND SIGHTED INDIVIDUALS TO THE KUDER PREFERENCE RECORD

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To my Mother and Father who made
all this possible,

To Mike, my wife, without whose
constant help and loyalty I could
not have accomplished this task,

To Katie, our little daughter, who
was my inspiration,

And to our unborn child who filled
my resting hours with pleasant
anticipation,

This work is dedicated.

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A STUDY OF THE RESPONSES OF BLIND AND SIGHTED INDIVIDUALS TO THE KUDER PREFERENCE RECORD

Chapter I

INTRODUCTION

This research is an investigation of the effect of blindness and certain conditions of blindness upon the measurement of vocational interests. It is essentially exploratory in nature. Previous research in this area is practically nonexistent, and a primary need exists for making an investigational inroad for the purpose of general orientation.

One of the ways to arrive at a statement of specific research intentions is to ask the simple question: What do we want to know? And yet an appropriate application of this question is sometimes made obscure by the entanglement of possible research ends and means to these ends, and for the same reason adequate responses to the question do not readily appear. Furthermore, without the benefit of

substantial previous research in the field of vocational Interest measurement of blind persons an exploratory study struggles for direction--and the directional possibilities of making such a beginning seem infinite. But even at this early stage of developmental progress of measuring the vocational interests of blind persons, after the recognition of practical needs there follow certain logical responses to serve as points of beginning.

From the practical and applied point of view of rehabilitation comes the rudimentary question: Can objective measures of vocational interests of blind persons be obtained so as to facilitate the development of employment plans and counseling procedures? To this grass-roots question based upon practical needs the writer responded with other questions designed to point up the various research possibilities. Among them was: Are there qualities inherent in blindness or are there traits found in blind persons which will complicate the application of accepted methods of measuring vocational interests? This question initiated the planning for research, and soon possible answers and yet other questions appeared, in terms of observable and definable conditions. The degree of severity of blindness can be tentatively regarded as a trait which might influence, directly or indirectly, the measurement of interests, along with the age at which blindness occurred, the percent of life blind, educational

experience, and consequently, the effects of general experiential opportunity. Intimately associated with this latter point are many possible problems of semantics, language development and usage and the manipulation of linguistic symbols. Still in this connection it may be asked, Can blind persons respond realistically to test items which were previously prepared for a sighted population? Can existing tests be used effectively to measure interests of blind persons, or will it be necessary to develop a new set of items from which there can be built a more appropriate test? Decisions concerning the type of test to be utilized must rest not only upon the item content, but also upon the type of measures that can be most useful in furthering research and in the relatively new field of organized rehabilitation and employment of blind persons. Should the test provide measures of interests in terms of specific jobs or measurements of broad interest categories? What format should a test have so that it will be functional and appealing? What methods can be developed to make a test available to blind persons both from the point of view of item presentation and item response? What are the problems associated with the various possible methods of communicating with blind persons for the purpose of making psychological evaluations of this type?

Contemplations more in terms of research planning

and data treatment elicited the questions: Are there differences between the structured interests of blind and sighted persons, and if so what are the determinants of these differences? If differences do exist can an already standardized test of vocational interests detect these differences between blind and sighted populations? Will a test discriminate in terms of interest patterns, not only between blind and sighted samples, but will it also point out differences within the blind population defined in terms of various conditions of blindness and certain concomitant conditions associated with blindness? Since reliability is not an essence which goes with a test, but one which is found to exist for a test administered under set conditions and to a described population, what will happen to the reliability of a test when it is used with a blind population?

Many of these questions far exceed the scope of the present research, but they indicate a beginning and a spontaneous evolvement of logical research possibilities.

In any attempt to evaluate blind persons through psychological testing, one of the most apparent problems is the "lack of commerce with," and the necessity for depending markedly upon verbal communication. The term "commerce with" has both general and specific referents. Later it will be discussed as "experiencing." A more immediate usage refers to the facility or the lack of

facility with which psychological test materials can be made available to blind persons, and the reciprocal familiarity of lack of it with which blind subjects can respond meaningfully to these materials. This "lack of commerce with" refers primarily, for our present purpose, to the restrictions placed upon both the test mechanics and the sheer response possibilities of the blind subject as a consequence of the inability to see per se.

The fact that Braille methods are available which enable blind persons to read with their fingers is of little help in broadening the means by which psychological tests can be administered. Quimby (1944) and Hayes (1948) developed techniques in which the Kuder Preference Record was read aloud to blind high school students. Responses were made by marking Braille Dot Sheets. The writer and colleagues in the field of rehabilitation of the blind attempting to use this method find that the complex Braille Dot Sheets introduce confusion and test results must be too frequently disqualified because of errors for the method to be considered feasible. Relatively few blind persons read Braille with sufficient speed or accuracy to look upon it as anything like a universal and efficient mode of written communication. Furthermore, the individual experiencing adventitious blindness, the individual who was blinded only recently in a hunting accident and who probably needs psychological

help more than persons who are accustomed to blindness of longer duration, will probably find it impossible to use Braille methods to any practical degree. Consequently, heavy reliance must necessarily be placed upon the spoken word for purposes of test presentation and responding.

This necessity to rely heavily upon verbal and oral testing methods carries with it problems of standardization. In many relatively free-response testing situations verbal and oral methods have been exploited to advantage. Such is the case with the Verbal portion of the Wechsler Intelligence Scale. But with the use of verbal and oral methods with tests normally requiring more discrete answers or other administrative methods it is necessary to find methodological counterparts to substitute for, say, "paper and pencil" techniques which typify many useful tests and which contribute meaningfully to practices of standardization. Attempts to make test materials available to blind individuals by methods calling for another person to read aloud to a blind subject test items not intended nor standardized for this intimate presentation introduce elements of inter-personal relationships which may have unfortunate effects upon certain test results. Subjects required to use readers in this fashion often seem to experience undue feelings of being observed--the reader assumes test quality and

the test assumes human and possibly judgmental quality with the result that the standardized relationship between subject and test material is disturbed. It is difficult to predict the significance of this lack of standardization, its direction or its role from individual to individual. The temptation to find security in the testing situation by asking questions of the reader, the back and forth verbal exchange other than that required for testing purposes, the hesitation to reveal personal materials to a reader with the same ease as might be expected when using more punctate and mechanical methods, the failure of the reader to keep presentations free of subjective quality, and the generally recognized tendency for behavior to occur in terms of social codes brought into play whenever two persons interact contribute to a state of affairs which makes prediction from test data uncertain and demands from the beginning of any testing program and research with blind persons greater rigor of testing methods.

In part these demands can be satisfied by recording a test item by item, exercising care to produce an objective effect by matter-of-fact reading. Once recorded the material may be reviewed and changed again and again until the investigator is satisfied that the reader imparts little to the test which is not desired. What is possibly more significant is that whenever the recorded test is played back the presentation will be exactly the same

as it occurred for previous administrations. Each successive subject is exposed to the same material standardized by the recording; the subject feels relatively independent of other persons and tends to regard the record and play-back mechanism in much the same way as sighted individuals may regard a written page which they are reading, simply as an inanimate part of the test materials. Because extraneous conversation is eliminated, testing time is shortened and undesirable effects of prolonged and unpredictable testing sessions are abolished.

But solving the matter of standardization of presentation is only half the problem of "commerce with," for the manner of responding is of equal importance. To have a test recorded for presentation and yet to have the blind subject make an item by item report of his answers to another person acting as secretary is to nullify many of the advantages of making the recording in the first place. Ideally, the subject should have an opportunity to respond easily and freely within the limits prescribed by the test, but without suffering from additional restraints imposed by complex mechanisms, tasks made difficult by the prerequisite of special skills, or by a personal attendant. Whereas a typewriter might well afford a means, although complex, of answering test items, far simpler arrangements of the same button-

pushing response possibilities may be devised for the purpose of affording easy commerce with test materials and the recording of item responses. A simplified keyboard designed to receive all responses necessary to the test, and at the same time requiring little manipulative skill, may be regarded by blind subjects as impassionately as sighted subjects regard a fountain pen.

Chapter II

CONCEPTUAL BACKGROUND AND SPECIFICATION OF PREDICTIONS

The present investigation is primarily one of exploration. The intention is to study the nature of responses of blind subjects to the Kuder Preference Record and to a direct question of preferred occupation. Specific research proposals are as follows:

1. To investigate the comparative stability or reliability of the Kuder Preference Record when administered to blind and sighted population samples under the conditions of special testing procedures designed to make this test equally available to both groups.

2. To investigate the relationship between interests, as measured by the Kuder Preference Record operating within the experimental limits and conditions, of the blind sample and "men in general."

3. To investigate the relationship between interests, as measured by the Kuder Preference Record operating within the experimental limits and conditions, of sub-groups of the blind sample, defined in terms of:

A. Visual acuity.

B. Age at onset of blindness.

C. Percent of life blind.

D. Educational experience expressed as the relative amount of time spent in public school or a school for the blind.

4. To study the relationship between expressed and measured interests of both blind and sighted groups.

5. To compare test time for blind and sighted groups, and to comment upon test times recorded for the testing methods of the present research, of a method involving the use of sighted readers in the presentation of the Kuder Preference Record, and the unaltered method prescribed by the Kuder Preference Record.

6. To determine attitudes of blind subjects toward the special testing methods designed to make the Kuder Preference Record available to blind subjects as well as sighted subjects.

Experience as controlled and modified from usual developmental experience by conditions of blindness is held to assume central importance in the structuring of interests. The present writer finds great variations in

the experiential history of blind persons coming to his attention in a rehabilitation program, these variations being dependent upon blindness. It is felt that these experiential differences markedly influence responses to an inventory such as the Kuder Preference Record. The need for an experimental investigation of this area is apparent. Herzberg and Russell (1953) state that slight evidence exists as to the similarity of measured interests of experienced and inexperienced workers, and investigations in this area are practically nonexistent. In their report of a study of the relationship between experience and interests as measured by the Kuder Preference Record, Dressel and Matteson (1952) felt that the following interest patterns were evident:

> 1. A student with limited and not entirely pleasurable experience may react by indicating interest in items almost entirely outside his experience.
>
> 2. A timid individual may tend to check only items in some way related to his experience.
>
> 3. An individual of an adventurous turn of mind may tend to select items outside of his experience, indicating his desire for new thrills (p. 109).

These same investigators concluded that in general students were conditioned by the extent of their experience in a particular area to express interests in that area. Areas with most differences in the direction interest-greater-than-experience were Science and Music.

The Clerical and Persuasive scales showed most differences in the direction interest-less-than-experience.

In an investigation of the effect of job experience upon scores of the Kuder Preference Record, Herzberg and Russell (1953) indicate that the interest patterns of workers only recently entering a job and experienced workers on that job were essentially similar, but that the entry groups are often characterized by higher scores on interest scales which particularly belong with their vocational field.

> Thus, it was shown that entry engineers were significantly higher on the Mechanical and Scientific scales and entry laboratory workers higher on the Scientific scale than were their experienced counterparts. These higher scores for the entry group may stem from the recent completion of training and their preoccupation with the subject matter in the characteristic areas (p. 479).

For the purposes of the present investigation it should be emphasized that interests are learned, and hence acquired through experience (Strong, 1943). It is assumed that they are acquired rather sequentially and developmentally. This developmental sequence is probably largely dependent upon the amount of exposure to the world about us, and upon certain time relationships in this exposure.

Darley and Hagenah (1955) conclude that occupational interests are products of the individual's total striving

for adjustment, and grow out of needs arising in his personality development.

The premise that interests are learned and that this learning takes place through experience in much the same way that other learning occurs assumes special significance for blind persons in the light of the fact that experiential impovishment is a primary factor of blindness. It seems reasonable to hypothesize that the measurement of vocational interests of blind and sighted populations will show certain basic differences. These differences will probably not be found to exist universally in all interest areas, nor will they be unidirectional. They will be evidenced in more or less degree in terms of experience.

In the following section an attempt is made to set forth various hypothetical considerations which logically belong to the present investigation. These hypotheses will be formulated from considerations of differential experience available to blind and sighted populations, and will refer not only to differences between blind and sighted persons, but also to differences within the defined blind population.

Visual Acuity and Interests

The very act of comparing blind and sighted populations

points up a continuum defined in terms of visual proficiency. Just as persons who are recognizably "sighted" vary greatly in their visual proficiency, primarily in terms of visual acuity, so do persons who are "blind" exhibit broad differences in their ability to see. In fact, the measurable visual continuum is a smooth scale ranging from the best possible vision (something better than 20/20 *) to the worst possible vision (no perception of light at all). The fact that limits on this scale have been designated as defining the condition of blindness in no way disturbs the smoothness and continuousness of this scale. As the lower limit of the "sighted" portion of the scale approaches the upper limit of the "blind" portion, the difficulty of clearly indicating whether a person is blind or sighted increases as a function of proximity, and the actual magnitude of the measurable difference between "blind" and "sighted" decreases to the point of absurdity. In practice this difficulty

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* The visual acuity fraction can be interpreted most readily if it is remembered that the numerator is a measure of distance referring to the visual ability of the individual whose vision is being measured, while the denominator refers to normal visual ability. Thus, the fraction 20/20 can be interpreted as meaning that the subject can see at 20 feet (the numerator) that a person of normal vision can see at 20 feet (the denominator). Similarly, a visual acuity represented by the fraction 20/200 may be interpreted as meaning that the subject can see at 20 feet what the individual with normal vision can see at 200 feet.

is largely avoided by using units of measure which are sufficiently spaced along the scale of visual acuity clearly to include or exclude a given individual as a consequence of established definitive limits, and a crudely measured threshold. Inasmuch as the measuring scale is continuous, and the section of the scale describing blindness is also continuous and relatively broad, considerable variability of visual proficiency can be anticipated even within the blind populations. Similarly, considerable variability of participation in and response to activities dependent upon vision can be anticipated.

Frequent reports from blind persons have indicated that even minute visual abilities are of great significance as experience and behavior determinants. The blind individual who has a visual acuity of 20/200 may visit an art museum regularly and derive great satisfaction from his visual experiences. On the other hand, the person with no vision at all could be expected to profit little by such an excursion, and after a possible single visit to an art gallery decide that his time could be spent more profitably engaging in activities allowing for greater personal participation and satisfaction. In this way the amount of vision, even within the limits of blindness, largely determines experience. It is held that this type control directly limits the opportunity

"to experience," the opportunity to learn, and, consequently, the opportunity to develop appropriate interests.

Strong (1943) points out that keen eyesight makes it possible to observe differences among birds that the "short-sighted" man cannot. He states that only the man with keen vision can become interested in observing birds.

Yet blindness does not make for a universal molding of interests. Just as no interest patterns can define "a teacher" or "an executive," no interest patterns can be expected to denote "the blind." Great individual variability is anticipated within the blind population. Given the condition of blindness, the writer feels that "the blind" do not constitute a single population, but that certain logical sub-populations can be defined. Doubtlessly, one criterion of major significance in this sub-dividing of the blind population is visual acuity, a primary determinant of experience.

It is believed that differences will exist between the measured interests of blind and sighted populations, and within the blind population, and that these differences will be found to be a function of visual acuity. It is further held that the magnitude and direction of differences between the measured interests of blind and sighted persons, and within the blind population, are functions of visual acuity. In this sense, magnitude and direction are mutually independent, yet both causally

related to visual acuity. When the measured interests of the sighted group (Group A) and the blind group (Group B) are compared, the arithmetic difference between their two means is the magnitude of the difference. The direction of the difference is determined by whether the mean value for Group A is greater than for Group B, or whether Group B exceeds Group A. For the present purpose, whenever a difference is found to exist between groups, the direction of this difference will be said to be "sight-ordered" if the mean value for the sighted group is greater than that for the blind group or if the sub-group or sub-groups having greater visual acuity within the defined blind population also have greater interest values than do groups with less visual acuity. Conversely, the direction of the difference is said to be "blind-ordered" if the value for the blind group is greater than that for the sighted group, or if the sub-group or sub-groups having the less visual acuity have greater interest values than the sub-group or sub-groups with greater visual acuity.

Interest areas most likely to reflect the two relationships described above are those embodying activities which are essentially available to persons as participants on the one hand, or not available to them as participants on the other, as a consequence of visual proficiency. Interest areas characterized by activities

in the main judged to be available to persons with more severe visual deficiencies are termed "blind-appropriate" interest areas. The scales on the Kuder Preference Record which fall into this category are Persuasive, Literary, Musical, Social Service, and Clerical. Interest areas characterized by activities in the main judged to be unavailable to persons with more severe visual deficiencies are termed "sight-appropriate" interest areas. The scales of the Kuder Preference Record which fall into this classification are Outdoor, Computational, Scientific, and Artistic.

The easier it is for blind persons to perform the tasks embodied in a given interest area, the greater will be the opportunity to develop interests in these activities, the magnitude of this learning being a function of the amount of possible participational experience. The difference will occur in the direction of the blind individual's revealing greater interest in areas in which he can function with relative ease and satisfaction to himself. The more difficult it is for blind persons to perform the tasks embodied in a given interest area, the less will be the opportunity to develop interests in these activities, the magnitude of this learning being a function of the amount of participational experience. The difference will occur in the direction of the blind individual's revealing lower interest scores in areas

in which he cannot function with relative ease and satisfaction to himself.

1) It is hypothesized that blind persons will tend to produce higher scores, relative to sighted persons, in interest areas which have been classified as "blind-appropriate" than will be the case for interest areas which have been classified as "sight-appropriate."

2) It is hypothesized that not only will the interest scores of blind persons on the blind-appropriate scales differ from the scores of sighted persons on these same scales, but also that these differences will exist within the blind population, the magnitude of the difference being dependent upon the amount of vision, and the direction of the difference being blind-ordered.

3) Furthermore, it is hypothesized that not only will the interest scores on the sight-appropriate scales differ from the scores of sighted persons on these same scales, but also that these differences will exist within the blind population, the magnitude of the difference being dependent upon amount of vision, and the direction of the difference being sight-ordered.

Age at Onset of Blindness and Interests

In the previous section it has been stated that visual acuity is a primary determinant of experience, and as such

is a primary determinant of the relative magnitude and direction of test scores of measured interests. Just as the terms "visual acuity" and "blindness" do not within themselves represent absolute values of effect upon the structure of interests, but assume meaning only when they are given quantifiable limits denoting visual proficiency, so effective meaning may be attributed to them also in terms of certain quantifiable time relationships. One of these is the age at onset of blindness, and another the number of years blind. A third expression which combines these two is "percent of life blind." If visual acuity functions as a behavior determinant, it is reasonable to assume that the nature of this influence will vary according to just when given conditions of blindness are first present in the developmental sequence of experiencing, and according to how long these given conditions have existed. The individual who has been blind since birth is not the same as the individual blinded in his teens. In the former case considerable experiential impovishment exists, while in the latter case vast residuals of experience and learning characterizing sighted individuals remain in spite of adventitious deprivation.

It is believed that blind persons who have had normal visual experiences will have interests more like the sighted population than will blind persons who have always been blind. This may be described as the persistence

of interests. The degree to which this is not so points up the fact that interests have been found to be relatively unstable until high school years. Darley and Hagenah (1955) state that the evidence points to the rather early development of interest patterns, probably by age fifteen or sixteen, and the interest patterns thereafter are comparatively stable.

Significant in this case may be the role of visual memory and the degree to which a blind person conceptualizes himself as a member of a blind or sighted population. But whether the interest differences of blind persons rests with the persistence of interests as such structured early in life, or with the role of visual memory and conceptualization of self, the causes of these differences can be reduced ultimately to experience. Since interests are found to be increasingly stable with increasing age through the early twenties, this stability becoming more apparent at high school ages, the more unlike the interests of sighted individuals will be the interests of blind persons who lose their vision early in life than would be the case for blind persons losing their vision in later years, and the earlier the loss of vision the more unlike will be the interests of blind and sighted persons.

4) It is hypothesized that for blind appropriate interests the earlier blindness occurs in chronological

development, the greater will be the difference between the scores of blind and sighted individuals, and within the blind population, the magnitude of the difference being an inverse function of the age at onset of blindness, and the direction of the difference being blind-ordered.

5) It is further hypothesized that for sight-appropriate interests the earlier blindness occurs in chronological development the greater will be the difference between the scores of blind and sighted individuals, and within the blind population, the magnitude of the difference being a direct function of the age at onset of blindness, and the direction of the difference being sight-ordered.

Percent of Life Blind and Interests

As learning is developmental, so interests are developmental. As the structuring of learning depends upon sequential experiencing, so the structuring of interests depends upon such a developmental sequence of experience. For this reason "age at onset of blindness" seems peculiarly appropriate as a basis for analyzing the role blindness plays in influencing the structure of interests.

It is a fairly simple matter to structure hypothetically the developmental consequences of the age of onset of blindness, although the degree of blindness (residual visual acuity) and present age may seriously complicate the picture. It is somewhat more difficult to structure hypothetically the developmental consequences of the number of years blind. Whereas age at onset of blindness is definitely related to a developmental sequence, this sequence coinciding more or less with the experiencing and learning processes contributing to the sequential development of interests, number of years blind does not so readily indicate this systematic developmental order. Whereas age at onset of blindness designates, if vision has ever been present, interruption of developmental sequence; number of years blind designates, if vision has ever been present, the amount of time a person has either not had visual experiences contributing to the structuring of interests, or the amount of time blind during which period previously structured interests might have undergone changes as a consequence of deprivation. If vision has never been present (cases of congenital blindness), then age at onset of blindness and number of years blind are temporally equivalent and therefore have the same developmental significance.

Age at onset of blindness is developmentally definite. Number of years blind is developmentally indef-

inite. Age at onset of blindness is developmentally anchored at a definite point. Number of years blind is anchored at two points, namely, the age at onset of blindness and present age. Age at onset of blindness finds significance as a point in time; that moment when development changes from "sight experiencing" to "blind experiencing." Number of years blind finds significance in terms of a span of time; the total period of "blind experiencing" not solely dependent upon the moment blindness occurs in developmental history nor upon the period of "sight experiencing." Number of years blind does not take into account total experience, i.e., "sight experiencing" plus "blind experiencing." In order to take account of both the period of "blind experience" and "sight experience" in those instances where individuals have not always been blind, it is herein proposed that the value percent of life blind be used as a substitute for number of years blind. Although percent of life blind does not indicate points of change in developmental sequence, it does take into account the relative magnitudes of the periods of "sight experiencing" and "blind experiencing" as constituents of total experience.

5) It is hypothesized that the greater the value of percent of life blind the more the measured blind-appropriate interests of the blind sub-groups defined in terms of this percent, will tend to differ from the

same interests of a sighted population, the magnitude of the difference being a function of the value of the percent of life blind, and the direction of the difference being blind-ordered.

6) Furthermore, the greater the value of the percent of life blind the more the measured sight-appropriate interests of the blind sub-groups defined in terms of this percent will tend to differ from the same interests of a sighted population, the magnitude of the difference being an inverse function of the value of the percent of life blind, and the direction of the difference being sight-ordered.

Educational Experience and Interests

The primary difference between the educational experience of blind and sighted individuals is that the blind students are usually institutionalized while the sighted students are not.

Educationally, the blind population is exposed to an institutional regimentation and sameness, while the sighted population enjoys that diversification of experience which is an expression of the relatively free and unregimental life of the family. In spite of efforts to give institutionalized blind students the broadest possible experience, a certain experiential impoverishment exists. This

impovishment is not so apparent at the academic level, for Braille literature, the Talking Book, classroom lectures, and many special teaching aids and techniques tend to provide adequate factual material for academic purposes. The deficit seems to lie in the fact that all of these methods are experientially "second hand" and the residential school does not balance this "second handedness" through direct extracurricular experience. The sighted student also must accept a great deal of this same "second hand" material in his academic pursuits, for he does not actually experience, say, events in history. But outside textbook academics the sighted students are not "campus bound" as are blind students, but are more available for experiential diversification and concentration.

If interests are a function of experience this type institutional impovishment should be reflected in measured interests of these individuals.

7) It is hypothesized that the greater the percent of institutional experience in a school for the blind, the more the measured blind-appropriate interests of the blind sub-groups defined in terms of this percent, will tend to differ from the same interests of a sighted population, the magnitude of the difference being a function of the percent of institutional experience, and the direction of the difference being blind-ordered.

8) Furthermore, the greater the percent of institutional experience in a school for the blind, the more the measured sight-appropriate interests of the blind subgroups defined in terms of these percents will tend to differ from the same interests of a sighted population, the magnitude of the difference being an inverse function of the value of the percent of institutional experience, and the direction of the difference being sight-ordered.

Measured and Expressed Interests

Whenever one is asked the question, "What job would you like to do most?" great demands are made upon the individual to bring together the influence of countless effects upon a single expression of vocational preference. This question demands of an individual, with reference to total experience, what an exacting investigator would shrink from doing in any absolute sense with reference to item responses from a general test of vocational interests, namely, reduce these many elements to a single expression of preference. Self-evaluations of this type are sensitive to many factors such as intelligence, emotional states, and past history. Once again the factor which may be expected to vary systematically according to the efficiency of vision is experience. The position has been taken in this investigation

that the more vision, the greater are the opportunities for experiencing, and therefore, in the present case, the better prepared is the individual to produce a unitary statement of vocational choice, as well as respond to structured test items. Sighted persons, with their relatively broad experience, might well approach this problem generally better prepared to provide statements of vocational choice, and generally better prepared to respond to test items. This would mean that for sighted persons a state of compatibility would more often be found to exist between their expressed interests and their responses to a test of vocational interests based upon many activity choices. The blind individual, on the other hand, approaches these tasks less well prepared in general. If blind persons are called upon to summarize all of their vocational knowledge and feelings into a single statement of preferred vocation they will draw either from their relatively meager experience or will respond to incomplete and second hand material to fill in the gaps where their direct experience has left off. This tendency also exists for sighted persons, but likely to a less degree as a consequence of a richer experiential history.

It seems reasonable to assume that for the most part both blind and sighted individuals would attempt to provide serious answers to a direct question of vocational

preference, albeit the blind are less well equipped to respond in an unrestricted manner.

9) It is hypothesized that blind persons will make more unwitting responses to test items and in formulating expressed interests with the result that the expressed and measured interests of the blind individuals making up the research population will be found to be incompatible more often than will be the case for individuals making up the sighted sample.

10) Finally, it is hypothesized that for blind individuals there will exist a tendency toward stereotyping of expressed interests. Individuals making up the blind sample will show this stereotyping to a greater degree than individuals of the sighted sample, this stereotyping to be expressed as clusters about jobs commonly filled by blind workers and relatively fewer different job titles.

Chapter III

TEST MATERIALS AND INTERVIEWS

Vocational interest tests can be classified in two basic ways: either as providing measures of interests in specific jobs and thus involving in their construction large numbers of job titles, or as providing measures of interest in broad vocational categories. (Some tests strive to satisfy both the broad category and specific job designation; nevertheless, these two functions of a test are distinctly different and they lend themselves to separate definition.) It is held that the rendering of specific job titles would not represent a realistic application of interest measuring techniques in the case of blind subjects. It would not be possible to assume that designated job titles could be assigned freely to blind subjects because of the impairments and

practical limitations imposed by blindness, and the unavailability of employment opportunities and hence a serious limitation upon the usefulness of measured interests expressed in terms of specific jobs. For the great majority of job titles set forth by a test measuring interests in these terms, there would remain only the necessary alternative of inferring from this specific job the larger category of interest of which the job is but a single expression. For these reasons no use is made of techniques for designating interest in jobs as such, but instead this study incorporates the use of the Kuder Preference Record--Vocational, which is scored for ten different yet relatively broad categories of vocational interest. In addition to this advantage, this test is appealing in form, easy to comprehend, lends itself to punctate responses, is short enough to avoid fatigue, is easy to score, and has been found through general use with sighted populations to be highly reliable.

Kuder (1956) in a non-exhaustive report of studies of the validity of the Preference Record and of the correlation between the Preference Record and achievement, satisfaction, and expressed occupational interests cites more than thirty-two pertinent investigations. Correlations are sometimes low between Kuder scores and achievement (grades), but they are usually highly related with failure and drop-outs compared with successful completion

of a course. Such was the case with results reported by Bolanovich and Goodman (1944). Many significant relationships are found between the Kuder scales and specific job titles, thereby adding another criterion for prediction. Kuder points out that Todd, in an unpublished study, found that the addition of preference scales increased the validity of a test battery from .57 to .67. Kuder also discusses the fact that Weynand and Detchen, reporting separate investigations, found that preferences could be used to predict achievement. Magill (1955), in a study of the validity of the Kuder Preference Record, stated that a complex analysis of variance treatment of the data gathered from a variety of college activity groups indicated significant differences between the group profiles. These were found to be at the 1% confidence level for the male groups. He also concluded that inspection of the profiles revealed that certain interests, rationally assumed to be manifest from the names and character of the activities, were generally well reflected by similarly named Kuder scales. Hayes (1948), in discussing the use of the Kuder Preference Record with blind high school students, states that this serious scientific attempt is well suited for use with these blind students.

In a discussion of the stability of the early Kuder Preference items, Kuder (1939) reports that these items

show remarkable stability even when treated violently with respect to context and form. The writer feels that this special stability might also render these test items more stable when a radically different group (a blind population) and radically different testing methods are employed.

Traxler (1943), using a test-retest method to establish some measure of the reliability of the Kuder Preference Record concluded, "The reliability coefficients for the revised Preference Record are unusually high. They range from .93 for the Social Service scale to .98 for the Computational and Clerical scales" (p. 510). Kuder, in the Test Manual, also reports comparably high reliability coefficients derived from application of the Kuder-Richardson technique. Traxler (1945) in another discussion of the Kuder Preference Record reports that it "...is among the most carefully constructed and useful instruments for the appraisal of interests" (p. 107).

These points referring to reliability are not presented here as an inference that a test found to be reliable with a sighted population will necessarily be reliable with a blind population, but at least the test has been found to be reliable with "men in general" and a tendency to retain this stability or any departure from this established reliability as a consequence of population or experimental procedure would be in and of itself

a valuable finding.

There has been no attempt to utilize Braille or ink print for test administration in the present research. Instead, verbal auditory techniques present the test material to the subjects, and a simple three-button keyboard receives all responses. Neither the activity of listening to test items nor that of pushing buttons requires special linguistic or manipulative skill, and it is reasoned that the simplified manipulanda avoid any injection of unpredictability as a consequence of inadvertently measuring Braille reading skill or manual dexterity, and minimize instruction and response complexity.

Hayes (1948), in using the Kuder Preference Record with blind subjects developed answer sheets printed in Braille. The highly complex orientation responses required by these Braille Dot Sheets, in conjunction with the elaborate instructions necessary for them, contributed to a fatiguing and confusing testing situation which usually lasted two hours for a single test administration.

Any individual differences in test language comprehension is probably no more pressing when blind subjects are being tested than when sighted subjects are used, except that in the present arrangement the subjects have no recourse to a glossary of terms. Steffire (1947) carried out an investigation with respect to the level

of reading difficulty of the Kuder Preference Record. He measured its vocabulary difficulty using the Stanford Achievement Test, Reading Examination as the criterion. The results indicated that the grade level of the vocabulary difficulty of the Kuder Preference Record was 8.4, and the difficulty for polysyllabic words was 6.2.

The Electro-Mechanical Testing Instrument

One of the primary practical efforts of the present study is to develop means by which the Kuder Preference Record could be made equally available to both blind and sighted populations.

One of the greatest temptations in working toward rehabilitation ends with blind persons is over-instrumentation. This temptation may embrace the over-modification of industrial equipment for the sake of making a job available to a blind worker, but thereby discouraging the employment of blind workers from the point of view of standardized industry and production management; gadgetry introduced for the sake of the welfare of blind persons such as gates at the top of stairs, ramps instead of stairways, and rounded corners replacing sharp square corners in architectual design make for unrealistic environmental conditions. The balance between absolute necessity and instrumentation or gadgetry for its own sake is a delicate one. Anyone with a flare for words

and some interest and skill in things mechanical can apparently justify elaborate instrumentation in the name of blindness and rehabilitation of blind persons, but the endeavor may sell itself short when inspected in the light of practical application, and may be found to be riding on a crest of emotionality rather than one of well thought out necessity. The writer sincerely hopes that the rather complex electro-mechanical instrumentation developed for this study is based upon practical and real need, and it is further hoped that subsequent design will reduce instrument complexity so that the method may be used broadly in the field of rehabilitation of blind persons. It was after a very thoughtful evaluation of the entire problem of experimental and subsequent testing that the decision was reached to proceed with the first instrument design and fabrication. Meyer, writing in a volume edited by Zahl (1950), points out that we must draw "...upon our resourcefulness to help blind people overcome their dependence upon those about them for the pencil and paper chores of home and office and the many other useful and pleasurable purposes which this new and really marvelous science of instantaneous recording has opened for us" (p. 430).

The primary elements of the testing instrument are a tape recorder deck and amplifier-speaker for presenting test items, an electronic stop mechanism of the automatic

voice relay design for the purpose of shutting off the tape deck after each item is presented, a simple three-button keyboard used by the subject to give all answers of "most" and "least" preferences for the tripartite test items, and a bank of twenty-one relays to handle the response permutations and other functions of the instrument, and a six-intelligence-channel Western Union perforator for making a punched record of all responses on a strip of paper transmitter tape.

This perforated paper strip is hand scored over a set of ten stencils transcribed from the Kuder Preference Record answer pad and punched by the same instrument through an auxilliary stencil-cutting keyboard into strips of transmitter parchment similar to but more durable than the kind of tape used for testing. These ten stencils are mounted on an aluminum plate to facilitate handling during scoring.

Various controls are provided to allow for setting auditory volume and tonal quality, adjusting the timing of the stop mechanism between items, controls for activating the tape deck without punching the paper answer tape, spacing the paper answer tape in the perforator without punching it, and code-punching the paper answer tape to mark the beginning, end, and top and bottom of the tapes. The circuits are so designed that mechanical and electrical errors of punch recording are virtually

impossible without being detected.

In the normal sequence of operation the subject sits comfortably before the speaker with the keyboard within easy reach. The housing for the power supply, relay banks, and perforator is removed some ten feet during testing to minimize distraction and apparent complexity. The subject is told by means of standardized instructions that the mechanism will "read" test items aloud. These items will consist of three short sentences or phrases describing various activities. The subject is asked to listen to all three of these sentences, and as he hears them "assign them" to the three buttons on the keyboard. The buttons are numbered by one, two, and three raised dots to correspond with the order of the sentences. After hearing the tripartite item, the subject is required to press the button "belonging to the sentence" he prefers doing most. Following this selection he is required to press the button "belonging to the sentence" he prefers doing least.

The three keyboard buttons are electrically connected to the six punches of the perforator through the bank of permutation relays. Three of these six punches are capable of perforating the left side of the paper answer tape, and the remaining three of perforating the right side of the tape as it moves through the perforator. The three keyboard buttons are alternatively connected

by means of automatic relay combinations to first the left three and then the right three punches. The left three punches, when in series with the three keyboard buttons, are capable of recording all response possibilities for the "most preferred" activity. Once one of these three buttons has been pressed, thereby representing a selection of "most" preferred activity of the three activities presented, this button is electrically locked out of the circuit, and the electrical connections to the keyboard are shifted to the punches on the right side of the paper tape. Either of the two remaining buttons, when pressed, will select the punch for the right half of the tape ("least preferred" activity), will affect the perforation, and will space the tape for the next "most" and "least" responses. At this point the sound system is automatically energized and the magnetic tape-transport mechanism advances the magnetic tape and presents the next test item. Through an internal circuit a stage of the electronic stopping mechanism "hears" the voice recorded on the magnetic tape as it "reads" the next test item. Essentially, this is an automatic voice relay control system. Upon the completion of this auditory presentation this same stage of the stopping mechanism senses the silence, and after the recorded voice has been silent for two seconds the magnetic tape-transport mechanism is shut off. Through this arrangement the sequence

of one hundred and sixty-eight items of the Kuder Preference Record is kept in register, and interruptions are caused to occur between items rather than within them as would possibly occur with, say, a simple time-cycle arrangement.

It will be noted that although the auditory unit of this instrument is stopped automatically after a two-second silence following item presentation, this auditory mechanism is not energized again until after the subject has made his two required selections. This arrangement tends to eliminate any sense of time pressure and allows the subject to set his own speed throughout the test, representing as closely as possible the same independent pacing control a sighted subject has when taking the test in its usual form.

A complete diagram of this testing equipment appears in Appendix D.

The Recorded Test

The recording of the items of the Kuder Preference Record was not done verbatim as they appear in the printed test form. Because it was not feasible to construct the testing instrument so that test items could be repeated at will, simplification of item wording was deemed ad-

visable. For this reason unnecessary words were eliminated from items so that an item which had read, "Earn part of your expenses in college by helping in a laboratory. Earn part of your expenses in college by scoring examination papers. Earn part of your expenses in college by playing in an orchestra," was recorded to read, "Earn part of your expenses in college by helping in a laboratory, by scoring examination papers, or by playing in an orchestra." Care was taken not to change the sense of the items in any way. Also, great care was exercised in having the test energentically presented, yet without emotional color. The recorded voice was that of a woman with neutral diction quality.

The Interview

Each interview was conducted in the privacy of a quiet testing room. The interview was opened with a brief explanation of the purpose of the research:

> The present research is designed to contribute to a study of the best methods of measuring the vocational interests of blind people. You have been asked to participate in this study not so much because we are interested in your individual responses, but because it is desired to collect a large number of responses of various people so that these new testing methods can be standardized. I will run through two questionnaires with you, after which I will ask you to operate a new instrument which has just been developed for our use.

Following this brief introduction, each subject was asked the questions appearing on the information questionnaire. This information questionnaire is reproduced in Appendix B. Its purpose was to collect simple descriptive data. Following this procedure, each subject was given the Verbal section of the Wechsler Intelligence Scale. The theoretical considerations of the study did not encompass predictions concerning intellectual level, but the writer felt that such a measure would afford insight into any population differences becoming apparent as the study developed. This test was administered to both blind and sighted subjects in the standard manner described in the test by Wechsler (1944).

A complete verbatim reproduction of all instructions appears in Appendix A.

Measurement of Visual Acuity

Medical eye reports were obtained from rehabilitation files for each of the blind subjects selected for the study. A copy of this eye report form appears in Appendix C. All persons with visual acuity greater than "Nil" (complete and total blindness without even the ability to perceive light) or "L.P." (the ability to perceive light only--Light Perception) were given a test of visual acuity. The writer had been instructed by a

qualified ophthalmologist in the use of a Snellen chart and light box. The range of Snellen figures and values was from 20/20 to 20/400. A standard distance of twenty feet was used for all measurements, except for those very few cases where slightly shorter distances were required for the subject to perceive the 20/400 figure. For all subjects except two the light box was illuminated by means of three forty-watt lamp bulbs throwing a pleasant diffuse light through the translucent eye chart. Two subjects requested that the light be turned off because they found it annoying, and that their vision be measured under existing light in the room. Inasmuch as room illumination was quite adequate to allow both of these subjects to see the Snellen figures, the writer judged that the resulting measurements of visual acuity were adequate for the research purposes.

Chapter IV

POPULATION SAMPLE AND PROCEDURE

The experimental design calls for the selection of two population samples, one made up of sighted persons and the other made up of persons who are blind. Each of these groups, while not being matched individual for individual, are selected as representatives of a population having made formal application for employment. Sample selection was further limited by sex and age.

Blindness for this study will be defined in operational terms generally accepted for rehabilitation purposes by the North Carolina State Commission for the Blind and approved by the Federal Office of Vocational Rehabilitation, Department of Health, Education, and Welfare:*

...have a central visual acuity of 20/200 or less in the

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* Sec. 8, p. 8.3, State Plan, North Carolina Commission for the Blind, Rehabilitation Division, 1955.

better eye with correcting lens, or a visual field limited to 30 degrees, or have a progressive condition or disease which in the opinion of a qualified ophthalmologist will reduce his vision to 20/200 or less.

Blind persons suspected of having visual conditions rooted in emotional or hysterical conditions were eliminated.

It was felt that the information contained on the medical eye reports was not complete enough to deal accurately with the problem of visual angle. The possibility of doing perimeter measurements was rejected because of the complexity of this task, and because it was reasoned that visual acuity represented the more functionally important trait of blindness.

The two population samples selected for the study are essentially differentiated on the basis of vision, the sighted group being well within the limits of normal vision, and the blind group having visual conditions falling within the above definition of blindness. These two populations are similar in that they are composed of white males ranging in age from eighteen through thirty-five. These conditions are imposed upon the samples because they represent sections of the general population and of the blind population most apt to be seeking employment, and possibly are most employable from the standpoint of general health. All subjects were free of major physical or mental handicaps, except the stipulated condition of

blindness for the blind population sample.

The sighted subjects were either permanent or temporary residents of the Raleigh, North Carolina, area. The sample, however, represents a much broader geographical origin, these persons having come to the Raleigh area for the purpose of attending colleges or universities, or for the purpose of seeking better economic opportunity. No attempt was made to sample populations throughout a more extended geographical area.

All blind participants were from the Raleigh and Greenville areas. These two regions are two of the six divisions of the state set up for administrative convenience by the North Carolina State Commission for the Blind. Once more, many of these blind persons are not native to the Raleigh area, but have come into this region for purposes of university training and seeking better economic opportunities. It is held that sighted persons from rural sections can move more freely than blind persons into areas of greater economic and employment activity, and for this reason a fairly well balanced sighted sample with respect to rural-urban characteristics is available from the Raleigh area alone. To achieve this same rural-urban representation among blind persons, it was judged necessary to schedule sampling from both the Raleigh (urban) and Greenville (rural) areas.

Individuals making up the sighted sample were selected

at random as they reported from day to day to the local office of the Employment Security Commission. The purpose of their visit to the Employment Office was to register for employment. Of all persons solicited the number refusing to cooperate was very small. In the majority of instances where the few refusals were received responsibility for the inability to participate lay in conflicting interview appointments with potential employers. There seemed to be no systematic refusals from a given type individual, and these refusals are judged to be of no consequence in changing the distribution of the research samples.

Of the eighty-one sighted persons asked to participate in the research, seven either could not or felt they would not care to be subjects. Of the remaining seventy-four, thirteen records were disqualified as a consequence of an unfortunate electrical failure of the testing equipment. This condition was not systematic with respect to subjects, but occurred at random as a consequence of a severe drop in line voltage during the cycling of heavy-duty air conditioning equipment operating in the building. These errors were discoverable only after the test had been completed, and it was deemed unwise to schedule a retest. One additional case was disqualified because he was found to be intoxicated, and another case was rejected after it was discovered that he

could not remember instructions. Although these fifteen rejections represent a discouraging loss of data, it is felt that the remaining fifty-nine cases are adequate for the present study.

The blind subjects were drawn from the current files of rehabilitation cases of the North Carolina State Commission for the Blind. All cases had applied for employment and were judged to be employable. Out of a total of some three hundred and fifty blind persons representing all the white males of ages eighteen through thirty-five and of active rehabilitation status, eighty clients selected on the basis of geographical location were asked to participate in the project. These eighty clients represent the total white male rehabilitation roster between ages eighteen and thirty-five in the Raleigh and Greenville areas, the two areas most accessible geographically. Of these eighty cases, one was eliminated because of inability of comprehend instructions, and two records were discarded because of errors introduced by electrical failure of equipment. It was considered inadvisable to schedule a retest. The group of blind persons finally included in the study numbered seventy-seven.

Descriptive data including age, intellectual level, and educational experience is presented in Appendix I.

Procedure

Following selection for participation each subject was given a general explanation of the purpose of the research, and what was expected of him. For the sighted subjects converging on the employment office this explanation was given in person by the writer. For the blind subjects distributed throughout thirty-eight counties appointments were arranged by letter with additional explanation being made in person by the writer at the time of interview. These instructions are presented in Appendix A.

Each subject was asked questions from a simple informational questionnaire (Appendix B), followed by administration of the Verbal portion of the Wechsler Intelligence Scale. Although the Vocabulary sub-test was given, only the first five sub-tests were used in calculating I.Q. values, and no attempt was made to prorate for six verbal scales.

Following completion of the Wechsler Scale the writer, having previously explained that the second phase of the interview would require the use of special equipment, briefly discussed the function of the electro-mechanical test equipment. The subjects were asked to sit down at a desk upon which the speaker had been placed, and with the three-button keyboard before him. Both the blind and

sighted subjects were asked to "look" at the keyboard as the instructions were presented.

In preliminary trials it was discovered that something of a disorganizing effect occurs upon hearing, for the first time, the presentation of the tripartite test item. The first sentence is usually accepted with a show of pleasure, probably in recognition of the successful operation of the equipment. But when this first element is followed closely by two additional sentences a crowding effect seems to occur, and many of the subjects become confused. The resulting disorganization was more apparent with sighted subjects than with blind subjects, but was evident in both to the extent that special care was taken in later testing to review verbally the first item with each subject before allowing him to make his selections. Apparently after being exposed to several items, usually less than four, the subjects seemed to develop a "set" for accepting and remembering the triplets. The investigator remained with the subject through the first five items, after which the instrument was stopped and the subject was asked if there were any questions. Frequently the subjects would review verbally the instructions, and after any necessary corrections or reiterations from the writer the subject was told that he would be left working alone. He was told that the voice on the recording would advise him as soon as the test had been

finished, and that there would be one hundred and sixty-eight triplets.

At the close of the test the subjects occasionally reported that they did not know the meaning of one or two words, or that once or twice they had allowed their "minds to wander" and had not faultlessly retained all three of the elements. It was judged that these few errors were no more serious than those of a similar nature which might occur when the ink print version of the test is used, and they were disregarded. Similarly, whenever a subject reported having accidentally pressed the wrong button or reversed the order of selection, these occurrences were so rare that they, too, were disregarded.

Before dismissal the sighted subjects were thanked for their willingness to participate, and were paid one dollar and fifty cents for their time. Usually each subject seemed to want to talk about the testing equipment or the field of work for the blind, and during these periods many noteworthy comments were made.

Before dismissal the blind subjects, except for the Nil and L.P. groups, were given an ophthalmological test of visual acuity.

The blind subjects were mailed checks in advance to cover cost of transportation, guide service, and meals. Those blind persons experiencing no transportation costs, not scheduled over meal times, and not requiring guide

service were not paid. At the time of testing they were not aware of the fact that other subjects were compensated in any way.

Before dismissal the blind subjects were asked the specific question, "Would you prefer taking a test with a machine like this one, or would you prefer having a sighted reader at your disposal who would read the test material to you and make a record of your answers?" These responses were noted.

Each of the expressed vocational interests from each subject was transposed into job titles set forth by the Dictionary of Occupational Titles (1949). To assist in this classification the job descriptions of this dictionary were used, as well as were the job titles in the Kuder Manual.

The time for each test administration was recorded by means of a stopwatch and this testing time was noted for each subject.

Chapter V

RESULTS

The main purpose of the study was to investigate the nature of responses of blind subjects to the Kuder Preference Record, Vocational, and to a direct question of preferred occupation. Experience as controlled and modified from usual developmental experience by conditions of blindness is held to assume central importance in the structuring of interests.

In order to carry out the research program it was necessary to develop testing techniques which would make the Kuder Preference Record equally available to both blind and sighted subjects. Analysis of results will largely be concerned with the relationship between the blind experimental population and the Kuder norms based upon the scores of one thousand males selected at random from telephone directories. From time to time

references will be made to the sighted experimental population, but its function was primarily to serve as a means of determining to what extent the stability of the Kuder Preference Record was affected by radically different methods of test administration. For this purpose, and for certain analyses, matched groups of blind and sighted subjects were deemed desirable.

For analytical purposes applications of the Kuder-Richardson technique for estimating reliability (Kuder and Richardson, 1937), and techniques of analysis of variance (Lindquist, 1953) and the application of t techniques as a test of significance of differences between means (Guilford, 1950) were employed.*

Reliability

Table I summarizes the findings concerning test reliability for the Kuder norm population given the test under usual conditions and employing usual testing methods, and the sighted population sample (Group A) and the blind population sample (Group B) given the test by means of the special methods developed for the present research. It is to be noted that for the most part the reliability

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*The writer is indebted to Dr. Arnold Grandage, Associate Professor, Department of Statistics, North Carolina State College, for special assistance in outlining a method for the partitioning of 1^{0} of freedom as a test for linear trend where sub-groups were composed of unequal numbers.

TABLE I. KUDER-RICHARDSON RELIABILITY COEFFICIENTS BETWEEN GROUP A, GROUP B, AND KUDER NORM GROUP

Interest Scales	Kuder	Group A	Group B	Kuder
0- Outdoor	.92	.92	.90	.92
1- Mechanical	.92	.90	.91	.92
2- Computational	.85	.82	.73	.85
3- Scientific	.85	.86	.78	.85
4- Persuasive	.91	.84	.87	.91
5- Artistic	.86	.80	.77	.86
6- Literary	.86	.78	.83	.86
7- Musical	.86	.82	.89	.86
8- Social Service	.89	.86	.87	.89
9- Clerical	.86	.84	.82	.86

coefficients remained high for both Group A and Group B. For practical purposes the test maintained remarkable stability with the different methods of test administration and with markedly different populations. Group A showed less tendency to produce somewhat lower coefficients of reliability than did Group B. It is difficult to interpret these results, but it seems reasonable to propose that introduction of different testing methods, especially methods which did not allow for a repeat presentation of test items when subjects failed to retain them in memory tended to produce slight instability. If this be true then it appears that for Group B there was a compounding of effect caused by introduction of this same testing method in addition to some effect concurrent with blindness itself. Furthermore, there is a likelihood that the formula employed for computing the Kuder-Richardson r_{tt} for this data rendered coefficients somewhat lower than would have been obtained had the formula used by Kuder in treating his normative data been employed. This formula substitution was made because of ease of application in that average proportion rather than actual proportion of "most" and "least" responses could be used without seriously affecting the results. In any case, inasmuch as the Kuder-Richardson method probably provides an under-estimate of the reliability of a test the apparent decrease in reliability with Groups A and B, although

interesting, is judged, for all practical purposes, to be insignificant.

Group A provided on the Scientific scale the only reliability coefficient which was higher than the coefficient for the Kuder norm group on the same scale. Similarly, only one scale, Musical, was shown to be more reliable for Group B than for the Kuder norm population. Although from Figures 1 and 2 it can be seen that neither group showed marked preference as such for these scales, it is entirely possible that each population was peculiarly adapted for responding more consistently to the respective scale items than to items of the other scales. Group A was composed of a rather large number of college men from a technical college which stresses scientific activities, while Group B, because of the necessity for depending heavily upon audition, demonstrated a peculiar consistency in responding to Musical items. Following this same line of reasoning it should be pointed out that by far the largest negative deviations of Group B from the Kuder group are to be found in three of the four sight-appropriate interest areas, namely, Computational, Scientific, and Artistic. These scales have been judged by the writer, along with the Outdoor scale, to be less appropriate to blind persons, and it is not without logic to reason that this very unappropriateness leads to response patterns more similar to these expected from random

FIGURE 1. MEAN SCORES FOR ALL INTEREST SCALES FOR GROUP A AND GROUP B PLOTTED ON THE KUDER PERCENTILE SCALE

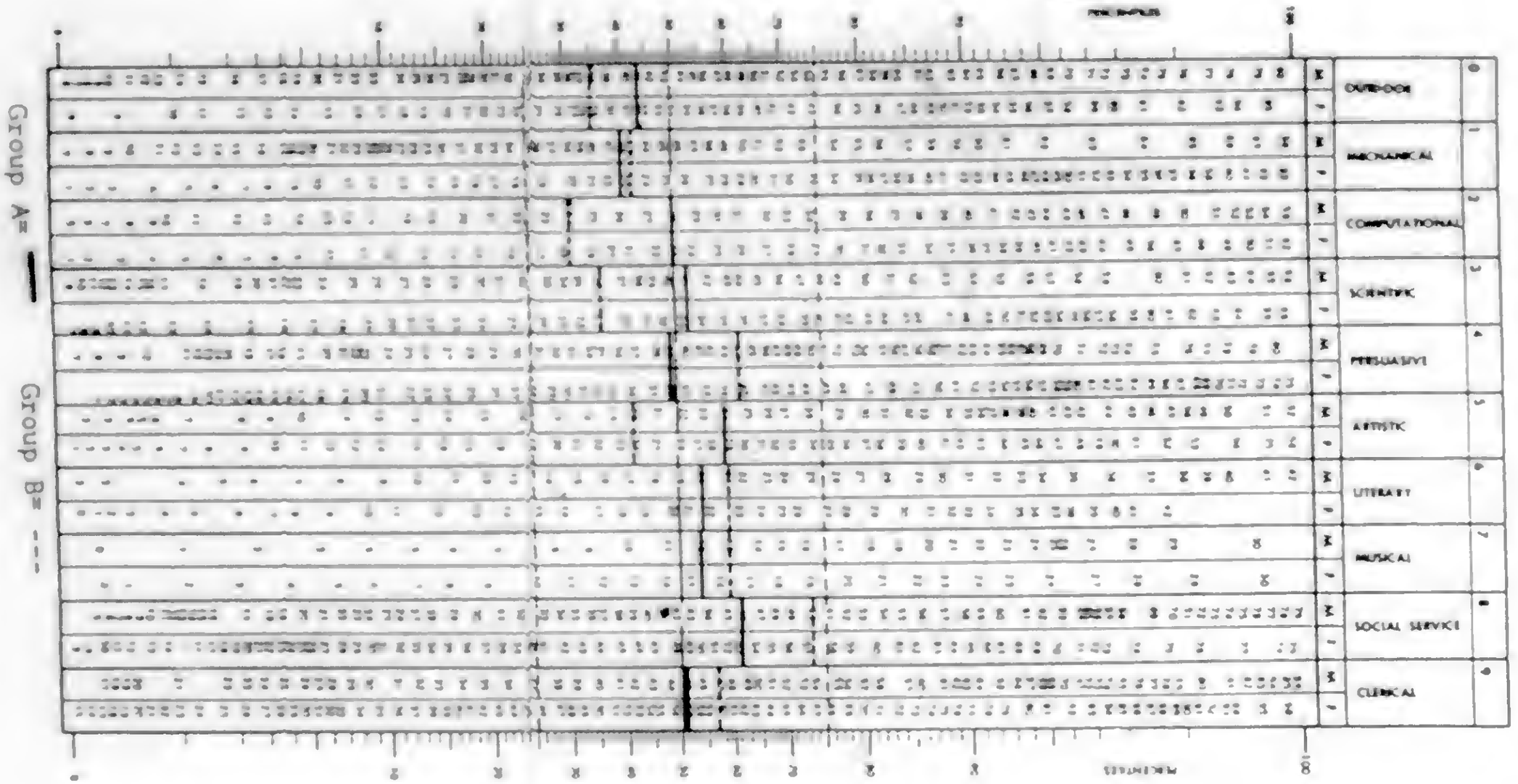
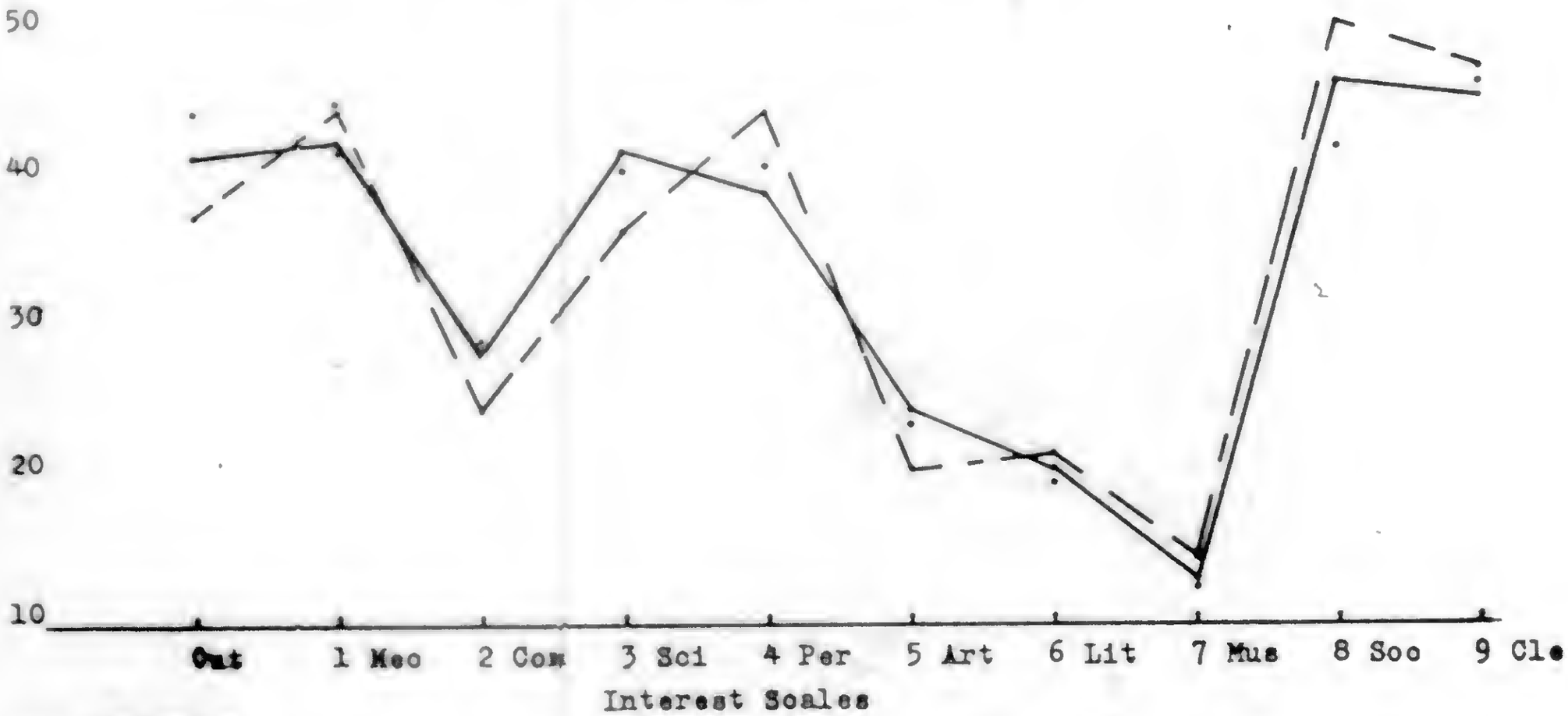


FIGURE 2. MEAN SCORES ON ALL INTEREST SCALES FOR GROUP A, GROUP B, AND KUDER NORM GROUP



chance responding. The fact that the Outdoor scale did not show a negative deviation of similar magnitude seems to indicate that although blind persons tend to have less interest in outdoor activities which defy mastery by blind persons, members of this group nevertheless carry with them an actual familiarity with the activities expressed in the items of the Outdoor scale, and respond to these items in a manner less similar to chance or random selection.

Overall Analysis

Table II and Figures 1 and 2 summarize the results which lend themselves to overall analysis. Figure 1 shows the composite mean scores of Groups A and B superimposed one upon the other on the Kuder chart of percentile values. Figure 2 depicts these same mean scores, along with the mean scores of the Kuder norm group, plotted directly on a numerical scale of mean values. Both methods of representing these mean scores have been employed because each advances peculiar opportunity for analytical discussion. Table II summarizes the distribution of means, sigmas, and t values for all interest scales for the Kuder norm group, and the two experimental populations. As predicted, there appears to be a rather consistent trend for the blind experimental population to score

TABLE II. MEANS, SIGMAS AND t VALUES FOR GROUP A, GROUP B, AND KUDER NORM GROUP

Interest Scale	A N= 59	t	B N= 77	t	K N= 1000	t	A N= 59
0- Out	40.95 (13.68)	1.19	38.12 (13.55)	3.05*	43.45 (14.91)	1.26	40.95 (13.68)
1- Mec	41.93 (11.47)	.59	43.19 (12.93)	.27	43.60 (12.87)	.97	41.93 (11.47)
2- Com	28.12 (8.45)	2.69*	24.53 (7.01)	3.72*	28.31 (8.73)	.16	28.12 (8.45)
3- Sci	41.12 (9.65)	3.03*	36.28 (8.79)	3.04*	39.98 (10.44)	.82	41.12 (9.65)
4- Per	38.86 (11.39)	2.44#	44.05 (12.77)	1.71	41.13 (14.61)	1.17	38.86 (11.39)
5- Art	23.69 (7.60)	2.90*	19.97 (7.17)	2.73*	22.85 (9.06)	.70	23.69 (7.60)
6- Lit	20.36 (6.72)	.27	20.70 (7.44)	1.13	19.62 (8.14)	.58	20.36 (6.72)
7- Mus	12.54 (6.11)	.62	13.28 (7.42)	.60	12.38 (6.49)	.06	12.54 (6.11)
8- Soc	46.15 (11.56)	1.97#	50.13 (11.63)	5.46*	41.96 (12.75)	2.47#	46.15 (11.56)
9- Cle	45.47 (12.32)	.64	46.80 (11.73)	.51	46.04 (12.71)	.34	45.47 (12.32)

*= 1% Level of Confidence
#= 5% Level of Confidence

higher than the sighted populations on blind-appropriate interest scales. Figure 1 shows this relationship for the Mechanical, Persuasive, Literary, Musical, Social Service, and Clerical scales. The converse is true for the four scales judged to be sight-appropriate, i.e., the sighted experimental population shows lower mean scores for the interest areas designated as Outdoor, Computational, Scientific, and Artistic. When these two experimental populations are compared with the mean for the Kuder norms (Figure 2) precisely the same score relationships hold with only one exception, namely, the mean for the Kuder group is very slightly higher than the mean for Group B on the Mechanical scale. The difference between these two means is statistically insignificant.

Surveying Figure 2, one is impressed by the degree to which the mean scores of these three populations tend to follow each other in their direction and magnitude. For those interested in recognizing the similarities between blind persons and their sighted counterparts, it is apparent that to a surprising degree their interests are similar. Yet, a more careful analysis reveals trends which very much agree with anticipated results rising out of assumptions about experiential history. Furthermore, a number of these differences are significant. In Table II it should be pointed out that differences

are found to exist. These differences occur in the expected direction at the 1% level of confidence for the Outdoor, Computational, Scientific, Artistic, and Social Service scales. In contrast with this rather highly significant differential between Group B and the Kuder norms, only one difference of statistical significance exists between the Kuder norms and Group A, and this is a difference on the Social Service scale significant at the 5% level of confidence.*

Special note should be taken of the Social Service scale inasmuch as it is the only interest area for which both Groups A and B were significantly higher than "men in general." It may well be that the fact that both of these experimental populations were seeking employment and were requesting agency service provides a clue to a real difference between the two experimental populations and "men in general." It is not without reason to speculate that the very status of unemployment, the need for security, and the role of requesting service from others causes individuals making up both of these populations

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* When computing large numbers of t values one can expect a certain number of these calculations to appear statistically significant by chance a certain proportion of times, one in twenty for the 5% level of confidence and one in one hundred for the 1% level of confidence. Although it is impossible to designate when a difference occurs which can be attributed to chance alone, frequencies of statistical significance in the order shown in Table II strongly indicate very real differences which cannot be accounted for on the basis of chance occurrence.

to assume a certain sensitivity to reciprocal service activities which largely make up the items on the Social Service scale. Forer (1955) points out that in an ongoing study of twenty-six different nosological groups early results indicate that fourteen of these groups are significantly elevated in Social Service interests and none is significantly depressed. He states:

> This writer is willing to speculate that high Social Service interests sometimes reflect an unrealistic, fantasy interest in other people with attempted denial of underlying hostility (p. 168).

The writer feels that one would not be far afield in entertaining the idea that blindness itself defines something of a nosological group, and the implication is apparent from what has been said above that unemployed males of employable age may very well, in and of themselves, constitute a group with certain of these same attributes with respect to measured interests.

Surveying the overall scatter of the means of Groups A and B (Figure 1) there seems to be a general trend from low scores on the left side of the interest profile toward high scores on the right. Low scores in the areas of Outdoor, Mechanical, Computational, and Scientific activities, accompanied by relatively high scores for Artistic, Literary, Musical, Social Service and Clerical activities have been described by Kuder as a pattern

tending to resemble feminine interests. The fact that both Groups A and B are somewhat better educated than might have been expected from a true cross-section of the population can very likely account for this slanting of mean scores.*

Hayes (1948) concluded after administering the Kuder Preference Record to blind high school boys that these students

> ...are more handicapped in the areas named: Mechanical, Computational, Scientific, Artistic, and Social Service, and in these areas their mean scores fall below the fifty percentile level. Their relatively high means in Musical and Clerical may well reflect the great emphasis on music in a school for the blind, with its vocational possibilities either in performance or piano tuning, and the unusual opportunities given them to train for typing and ediphone work (p. 103).

Visual Acuity

It has been proposed that not only will differences be found between the interest patterns of sighted persons and blind persons as a group, but also that significant differences and trends will exist within the blind pop-

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*The information contained in the 1950 census of the United States Government shows that for the nation the grade level completed by all adults twenty-five years of age and over to be nine years and three months. For the State of North Carolina the average grade completed for adults is seven years and nine months. This latter statistic can be broken down further into male and female groups; grade level completed for males is shown to be seven years and six months, with that for females eight years and two months.

ulation itself as a consequence of visual acuity. Table III and Figures 3 through 12 summarize the findings relative to this proposition. In order to study the relative significance of visual acuity upon interest patterns it was necessary to sub-divide Group B into a number of sub-groups, themselves limited by various levels of visual acuity. Group B might have been divided in an infinite number of ways, and for the most part, one form of partitioning might have been as revealing as another. In attempting to arrive at some solution to the problem of creating sub-groups out of Group B the writer converted the Snellen values into percent of visual loss by means of a table recommended by the American Medical Association for this purpose. This conversion was found to be not particularly helpful for it did not provide any absolute means of setting up sub-groups, but still left the partitioning to arbitrary judgement. For this reason the writer returned to the original Snellen ratings and responding to his experience and the accompanying awareness of the relative severity of the visual handicap at the various Snellen values rather arbitrarily divided Group B into five different sub-groups, each one seemingly claiming a roughly equivalent range on the Snellen scale. More important, however, was the fact that these divisions seemed logically to represent segmental portions of the blind population more closely representing

TABLE III. VISUAL ACUITY RANGES FOR SUB-GROUPS FORMED FROM DIVIDING GROUP B FOR ANALYSIS OF VARIANCE

Sub-Group 1* N= 20	Nil and LP to Vague Form and 20/800
Sub-Group 2 N= 5	Vague Form and 20/800 to 20/400
Sub-Group 3 N= 10	20/400 to 20/200
Sub-Group 4 N= 25	20/200 to 20/100
Sub-Group 5 N= 17	20/100 and Better

* For the Second Analysis of Variance Sub-Group 1 was again sub-divided into Nil and LP components. The Nil Sub-Group, N= 7, was used with the four remaining Sub-Groups in this Second Analysis. For the Third Analysis of Variance Sub-Group 1 was omitted altogether.

FIGURE 3. MEANS OF VISUAL ACUITY SUB-GROUPS--OUTDOOR

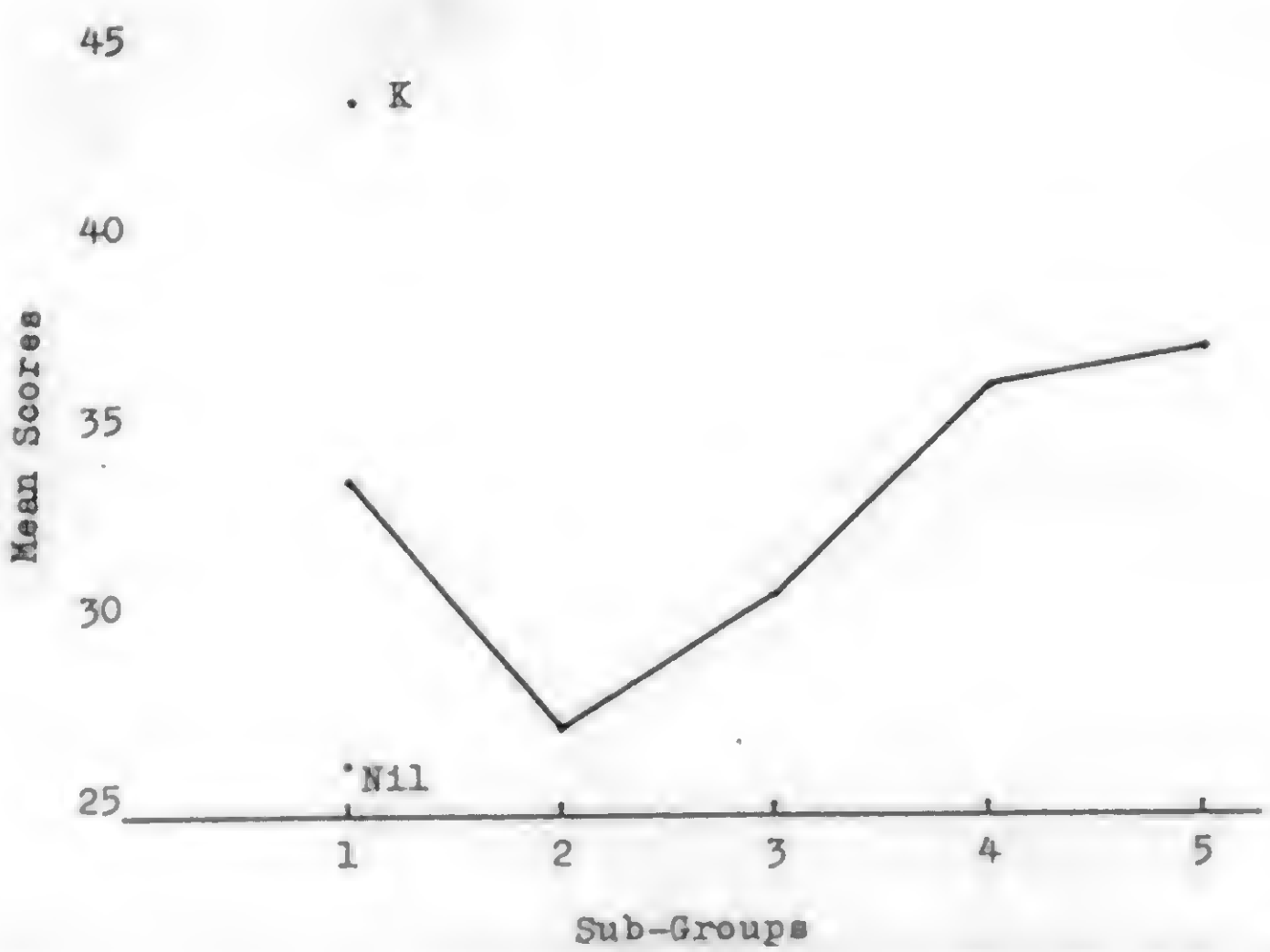


FIGURE 4. MEANS FOR VISUAL ACUITY SUB-GROUPS--MECHANICAL

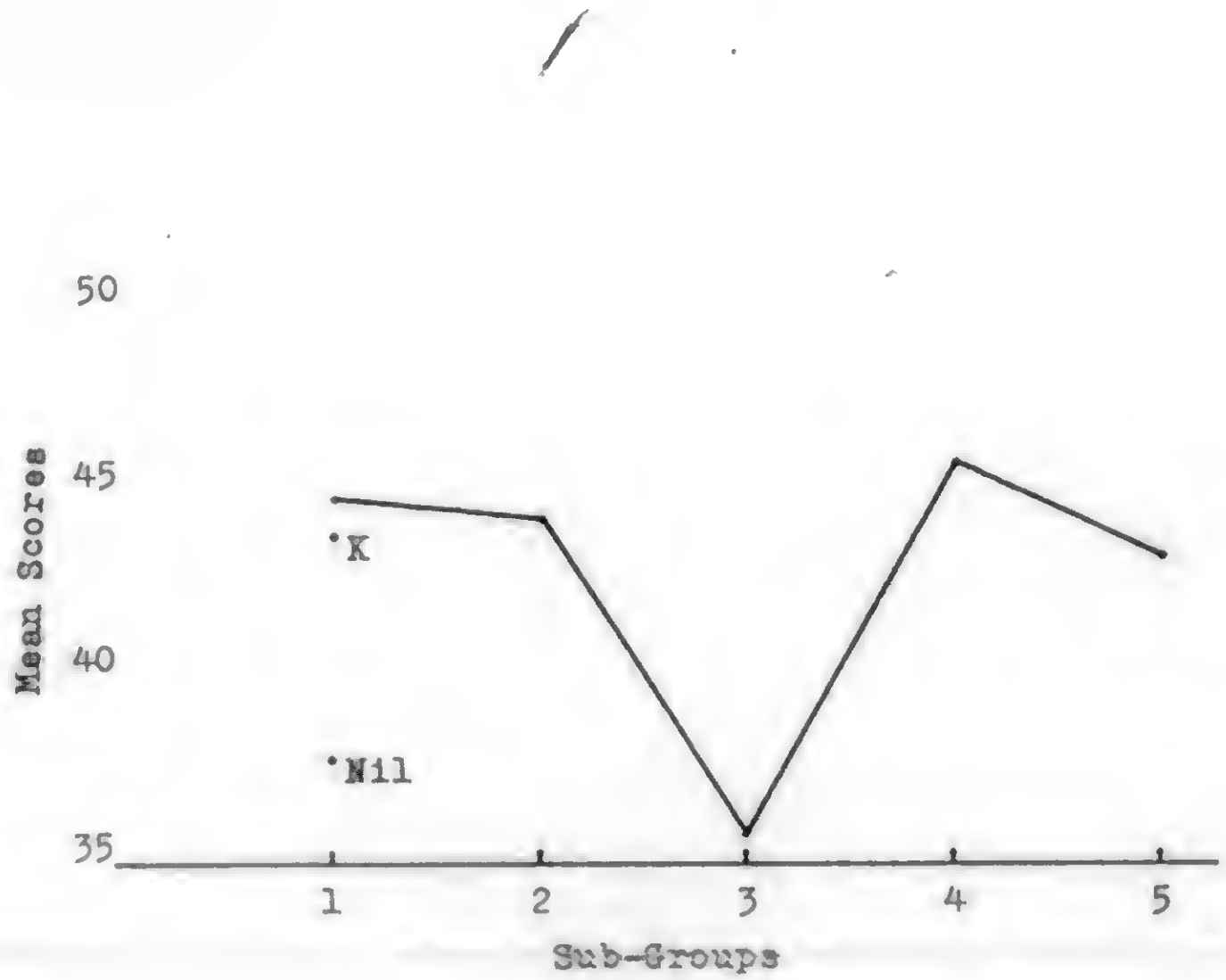


FIGURE 5. MEANS FOR VISUAL ACUITY SUB-GROUPS--COMPUTATIONAL

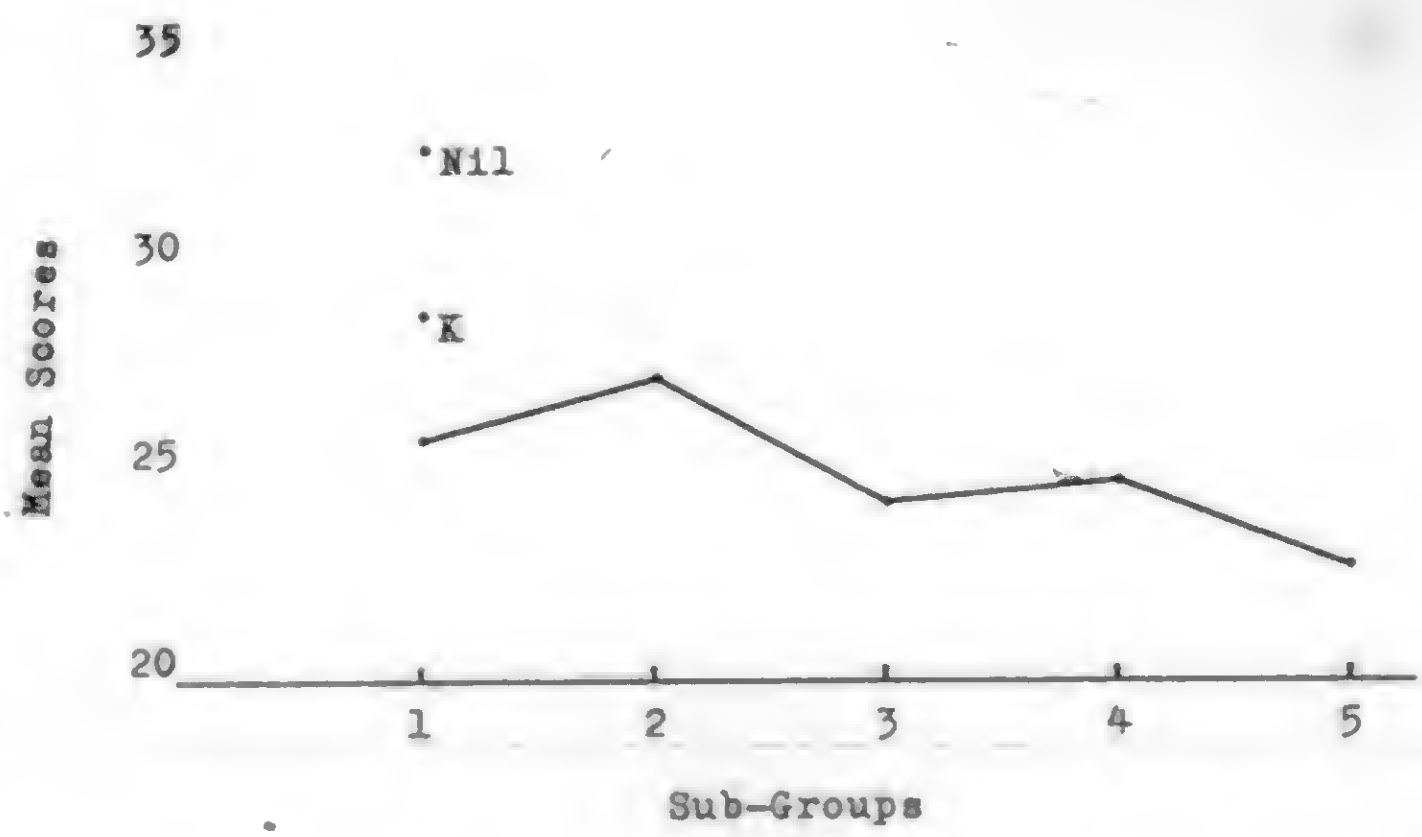


FIGURE 6. MEANS OF VISUAL ACUITY
SUB-GROUPS--SCIENTIFIC

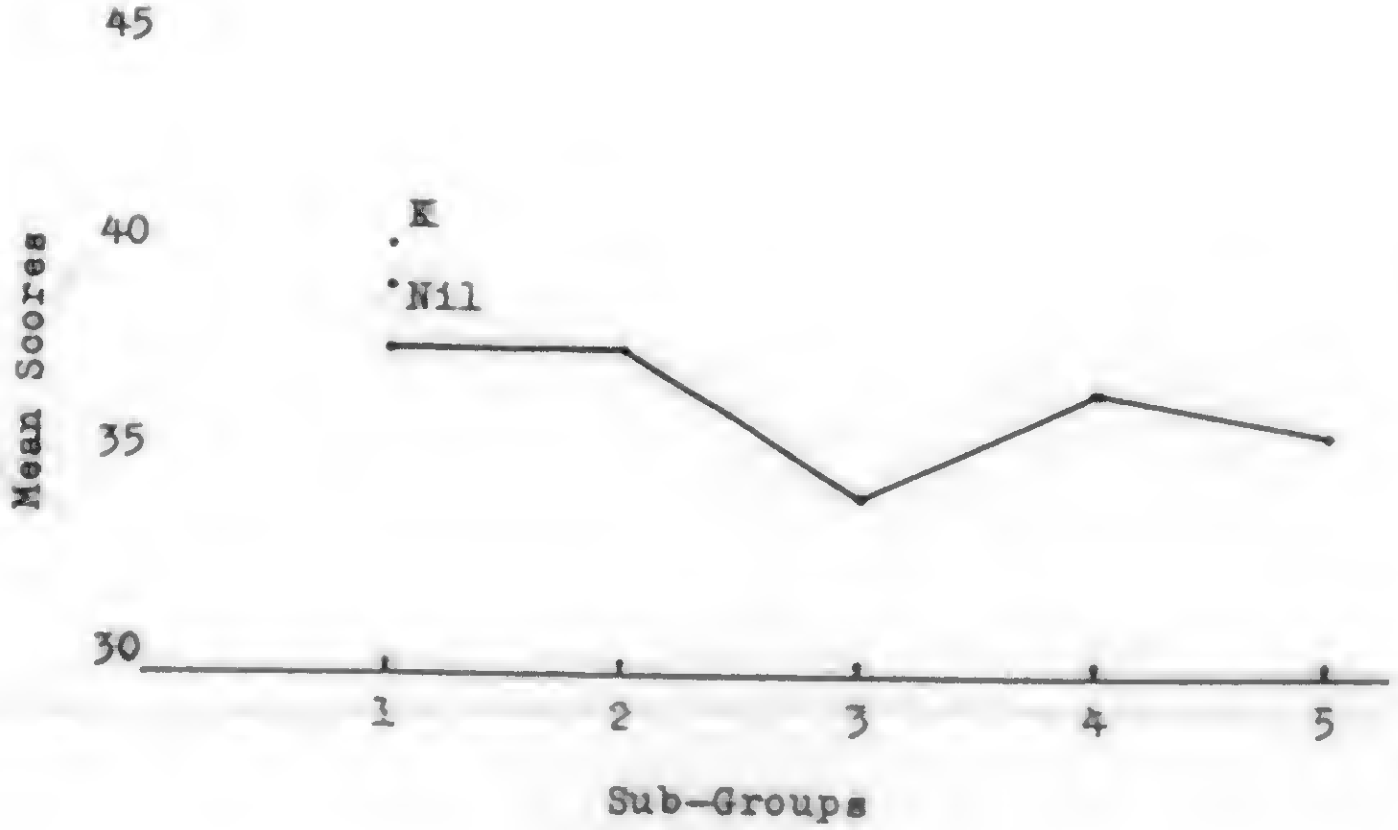


FIGURE 7. MEANS OF VISUAL ACUITY
SUB-GROUPS--PERSUASIVE

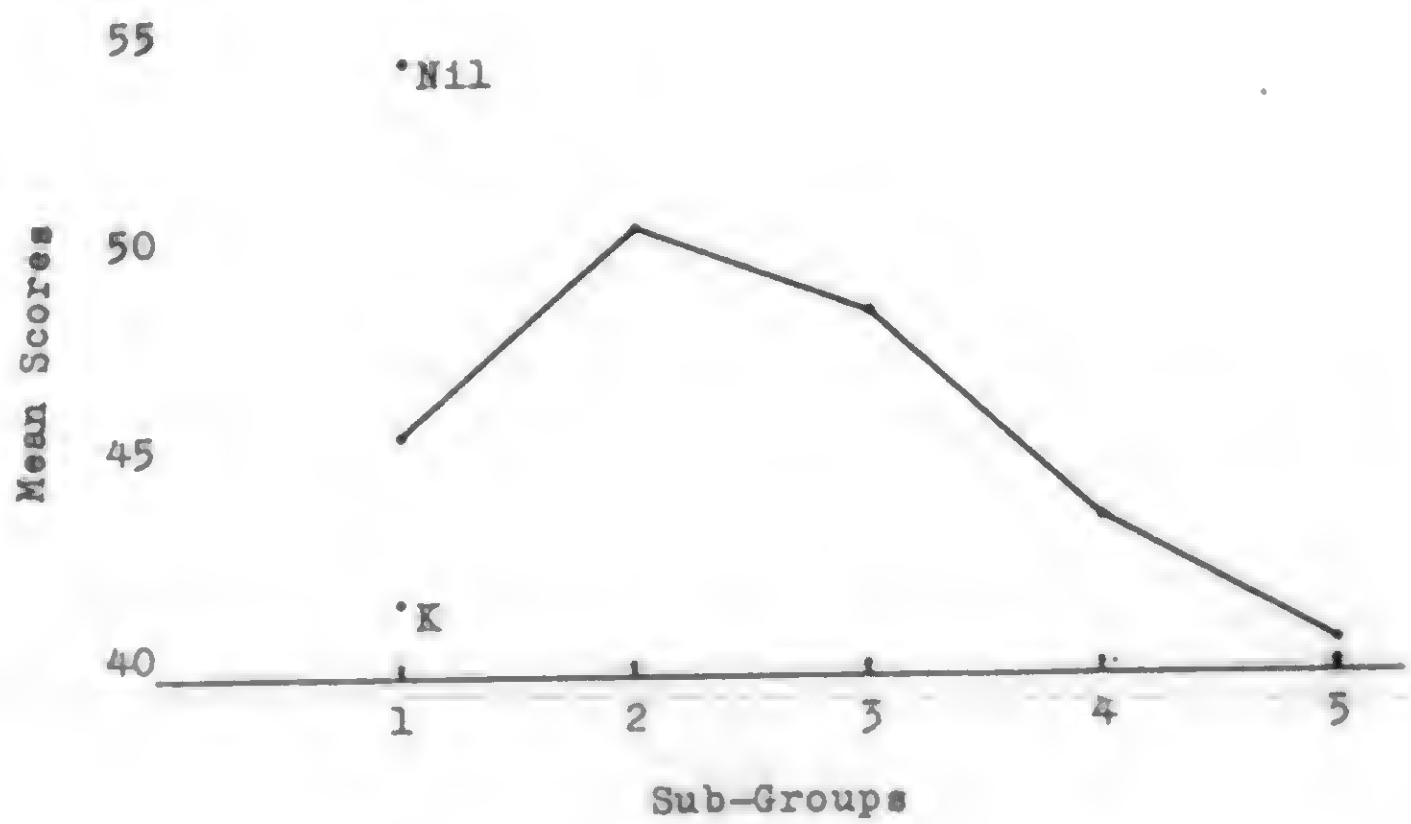


FIGURE 8. MEANS OF VISUAL ACUITY
SUB-GROUPS--ARTISTIC

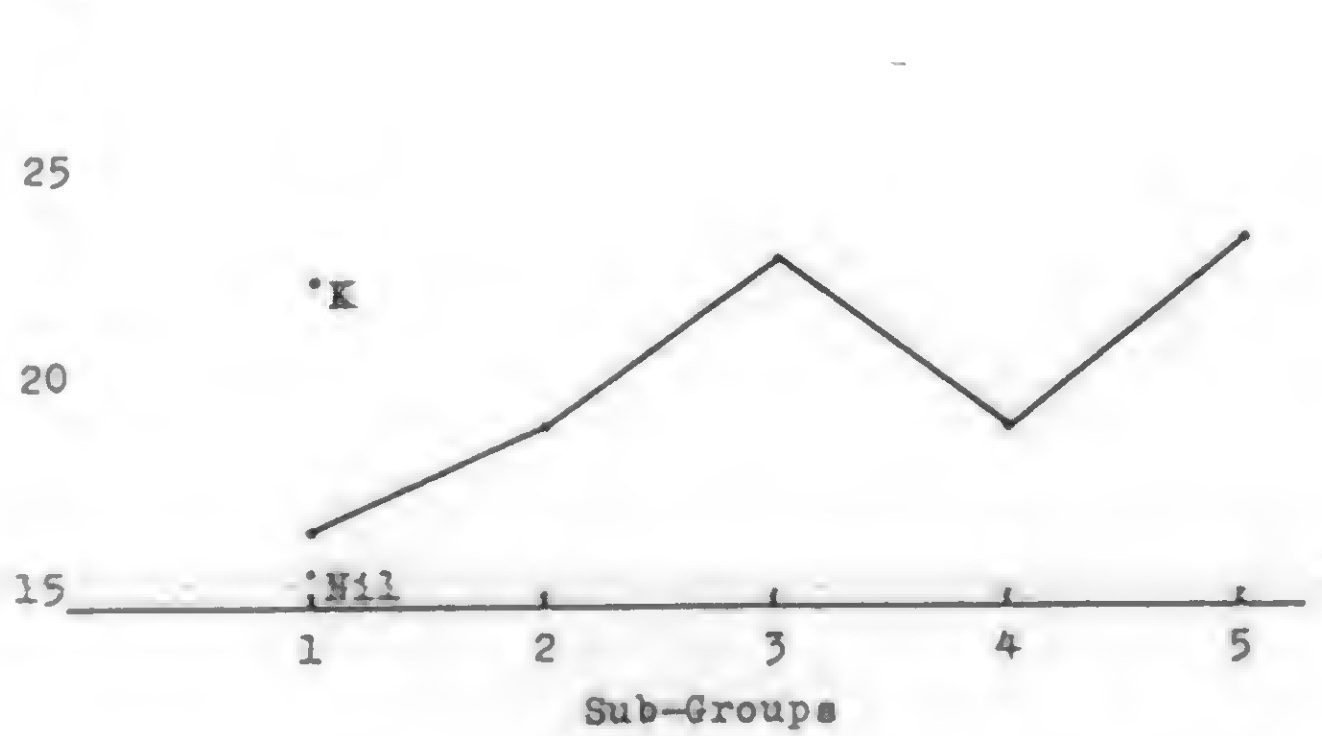


FIGURE 9. MEANS FOR VISUAL ACUITY
SUB-GROUPS--LITERARY

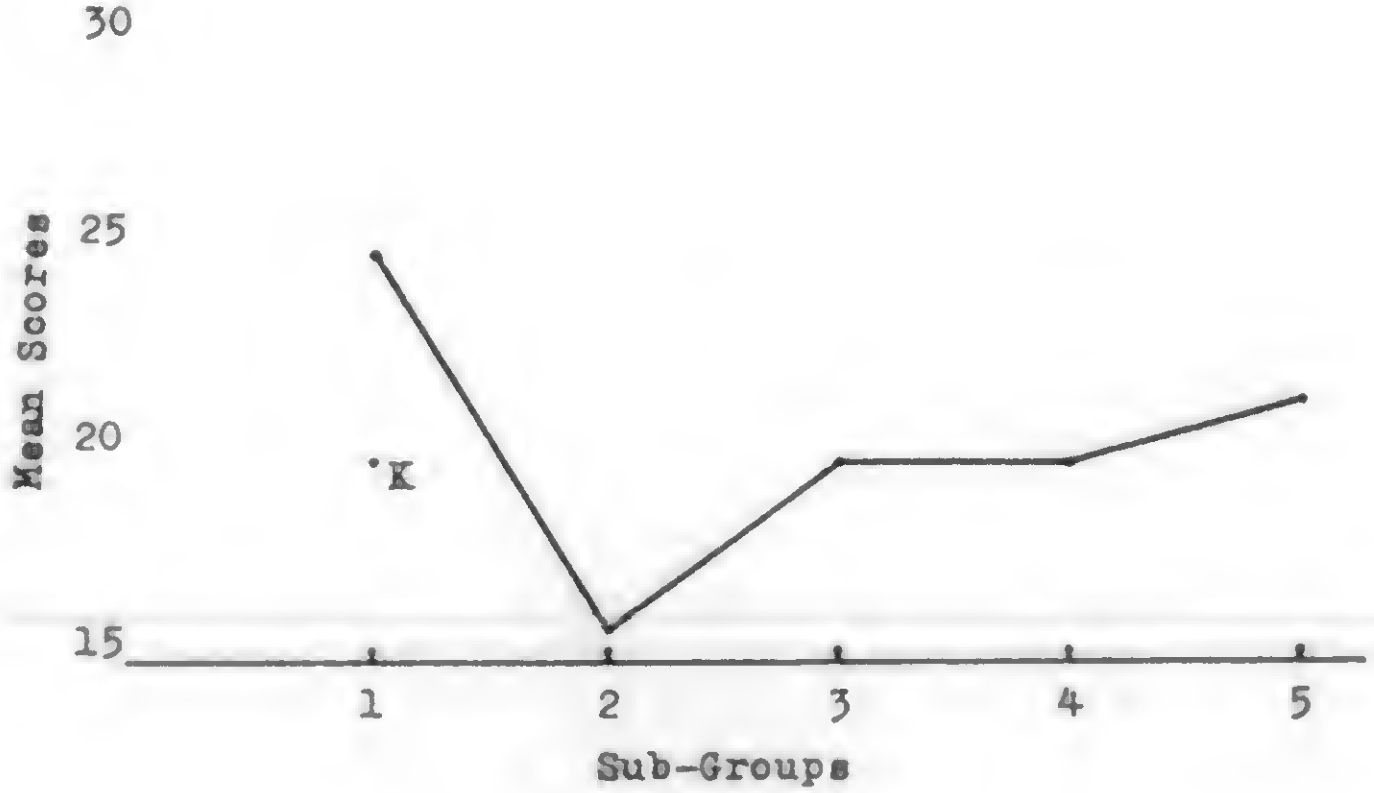


FIGURE 10. MEANS FOR VISUAL ACUITY SUB-GROUPS--MUSICAL

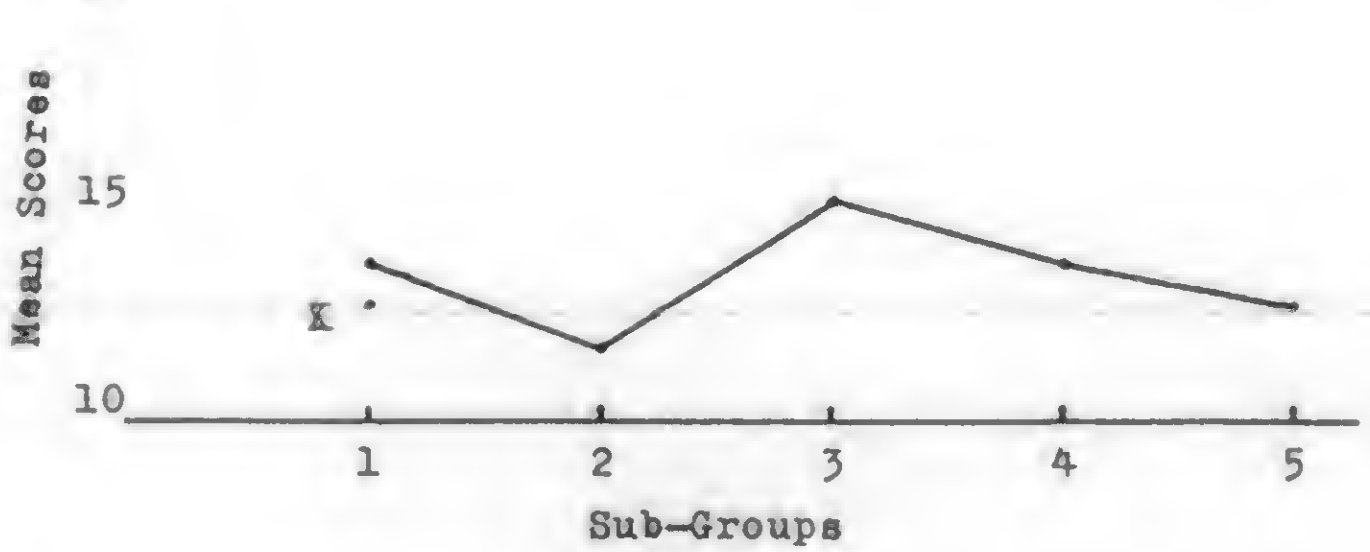


FIGURE 11. MEANS FOR VISUAL ACUITY
SUB-GROUPS--SOCIAL SERVICE

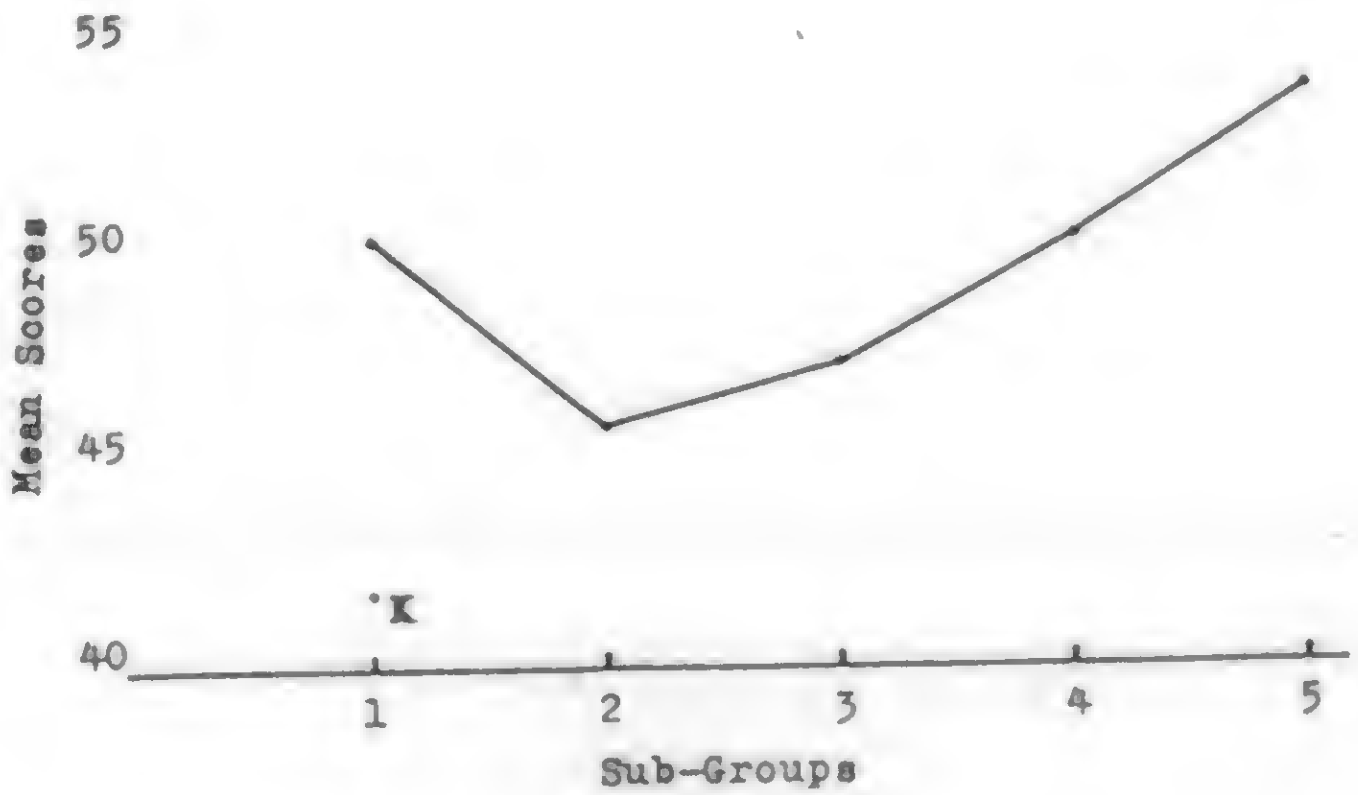
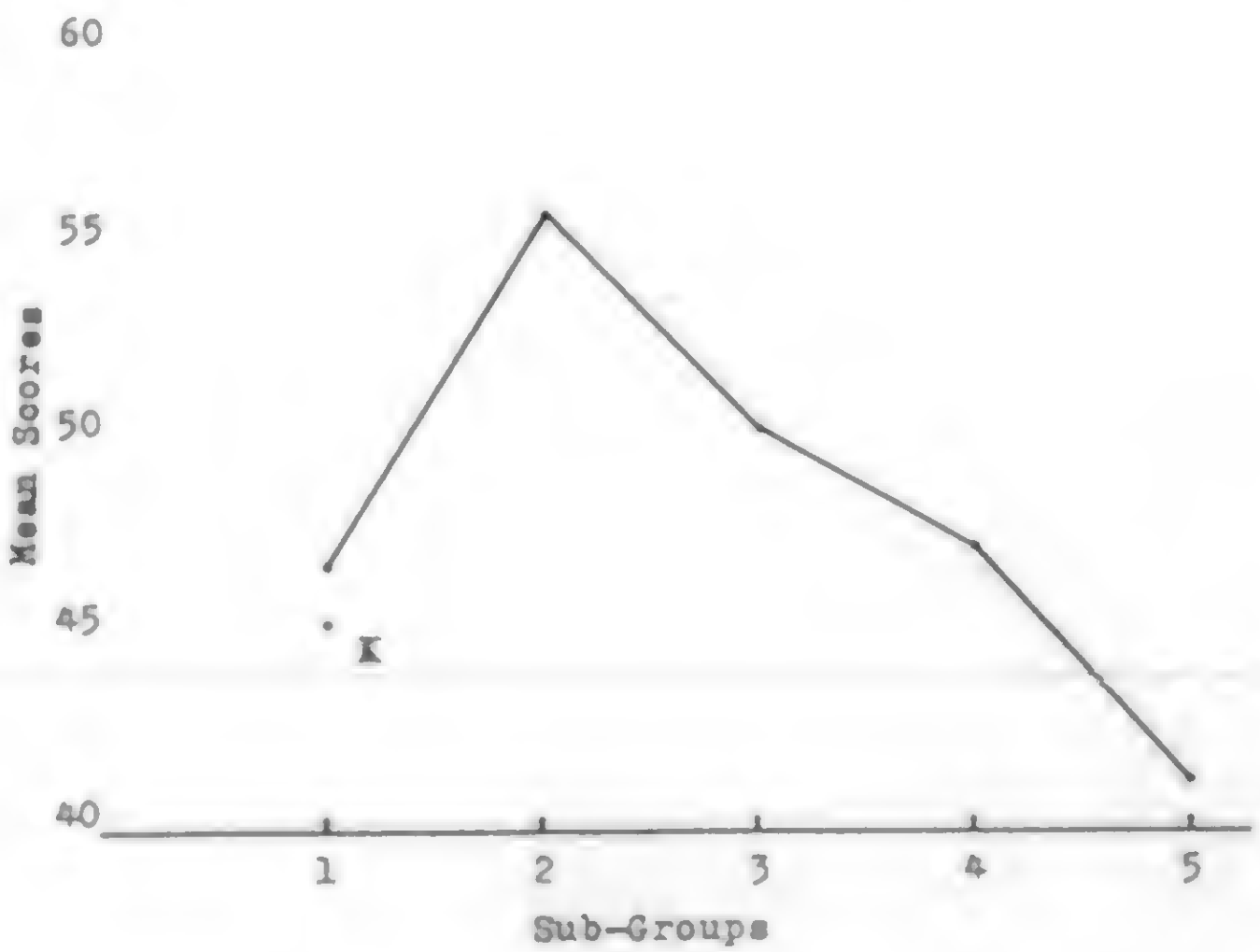


FIGURE 12. MEANS OF VISUAL ACUITY SUB-GROUPS--CLERICAL



functional ability in general. Table III shows the visual acuity values and the number of cases in each sub-group.

It was felt that techniques of analysis of variance would provide the best means of statistically analyzing the effect of visual acuity upon interest scores. For this purpose a simple within-between analysis of variance was conducted. Following this procedure and based upon inspection of the means of the five sub-groups, it was discovered that Sub-Group 1 made up of individuals with what had been assumed to be the lowest amount of vision, showed such marked deviations from expected linear trends that it was suspected of either being composed of more than one population, or for some unaccountable reason did not carry out these linear expectations. A careful survey of the visual acuities of the members of this sub-group revealed that persons showing Nil on their medical eye reports produced radically different mean values than did persons showing a visual acuity of L.P. The former group of individuals more often provided means which agreed with expected and existing linear trends, while the latter group frequently showed a radical departure from this linearity. In an earlier section the writer pointed out that measures of visual acuity were secured by the use of standard Snellen charts for all blind subjects except those designated as Nil and L.P. on the medical eye reports. It had been presumed that these visual acuities

were too low to provide Snellen ratings. Analysis of the performance of these two groups separated out of Sub-Group 1 tended to indicate that those individuals carrying the notation L.P. on their eye report actually performed more like individuals having measured visual acuity of considerably higher level. For this reason a second analysis of variance was conducted for those interest scales which, through inspection, seemed to justify this re-analysis. Figures 3 through 8 show the new means for the Nil group. In other instances where this division of Sub-Group 1 did not restore what seemed to be an existing linear trend, it was concluded that the individuals, both Nil and L.P., making up this group behaved in a cohesive fashion for the interest scales in question and as such represented a single population, but one which somehow departed radically from expectations. In these cases Sub-Group 1 was omitted entirely and a so-called third analysis of variance was conducted with the four remaining groups. Figures 9 through 12 represent mean distributions from which Sub-Group 1 was so omitted for the third analysis of variance.

Following these statistical procedures note was taken of the fact that the resulting F values were not readily interpretable other than representing the relative magnitude of variance within and between sub-group populations, a low F tending to indicate relative high variance within the sub-group populations with a high F tending to

indicate relatively high variance between the sub-group populationns. No indication of linear trend as such could be extracted from this statistic alone. For this reason steps were taken to partition 1^{o} of freedom as a test for linear trend. The F values derived from this calculation represent the significance of linear trend, and can be interpreted in terms of statistical significance of this linear trend rather than overall variance. Table IV provides a summary of the sub-group means and the F values coming from this procedure of analysis of variance and partitioning for 1^{o} of freedom for linearity.

In the first analysis of variance linear trends found to be significant following the partition of 1^{o} of freedom were for the Outdoor scale, significant at the 5% level of confidence, and the Artistic scale, significant at the 1% level of confidence. Separating the L.P. and Nil visual acuity groups making up Sub-Group 1, and discarding the individuals classified as L.P., conducting a second analysis of variance, and partitioning for 1^{o} of freedom produced a significant trend for linearity at the 1% level of confidence for the Outdoor, Computational, and Persuasive scales. Following this treatment the Artistic scale showed a trend toward linearity at the 5% level of confidence. It should be remembered this second analysis of variance did not include the remaining four interest scales because separating Nil and L.P. individuals

TABLE IV. MEANS AND F VALUES FOLLOWING ANALYSIS OF VARIANCE FOR SUB-GROUPS DEFINED ON THE BASIS OF VISUAL ACUITY

Interest Scale	Means	First Analysis	Second Analysis	Third Analysis
O- Out	1 33.70			
	'1 25.43			
	2 32.00	1.61	2.65	
	3 35.50	(5.61)#	(9.89)*	
	4 41.16			
	5 42.18			
	K 43.45			
1- Mec	1 44.50			
	'1 37.71			
	2 44.00	1.18	1.35	
	3 35.40	(.013)	(1.33)	
	4 45.56			
	5 43.06			
	K 43.60			
2- Com	1 25.30			
	'1 32.43			
	2 27.20	.5866	3.09	
	3 24.30	(1.49)	(10.41)*	
	4 24.64			
	5 22.59			
	K 28.31			
3- Sci	1 37.45			
	'1 39.00			
	2 37.40	.3223	.3475	
	3 33.90	(.3539)	(.3810)	
	4 36.64			
	5 35.47			
	K 39.98			
4- Per	1 45.70			
	'1 54.71			
	2 50.20	1.11	2.32	
	3 48.30	(2.49)	(8.91)*	
	4 43.48			
	5 40.41			
	K 41.13			

*= 1% Level #= 5% Level ()= F_L Linear Trend

'1= Nil Sub-Group used in Second Analysis of Variance

TABLE IV. MEANS AND F VALUES FOLLOWING ANALYSIS OF VARIANCE FOR SUB-GROUPS DEFINED ON THE BASIS OF VISUAL ACUITY (continued)

Interest Scale	Means	First Analysis	Second Analysis	Third Analysis
5- Art	1 16.50			
	'1 15.71			
	2 19.20	3.00	2.23	
	3 23.10	(7.15)*	(4.03)#	
	4 19.20			
	5 23.53			
	K 22.85			
6- Lit	1 24.35			
	2 15.20			
	3 19.20	2.36		.8860
	4 19.24	(2.28)		(2.17)
	5 21.00			
	K 19.62			
7- Mus	1 13.35			
	2 11.60			
	3 14.80	.2233		.3047
	4 13.52	(.0313)		(.0667)
	5 12.41			
	K 12.38			
8- Soc	1 49.85			
	2 45.60			
	3 47.10	.6918		.9190
	4 50.20	(.9098)		(2.70)
	5 53.47			
	K 41.96			
9- Cle	1 47.30			
	2 55.20			
	3 50.00	1.65		2.00
	4 46.88	(2.26)		(5.90)#
	5 41.76			
	K 46.04			

*= 1% Level #= 5% Level ()= F_L Linear Trend
'1= Nil Sub-Group used in Second Analysis of Variance

of Sub-Group 1 produced little or no change in the linear pattern. A so-called third analysis of variance was conducted with these four remaining interest scales, in which process Sub-Group 1 was omitted entirely, it having been judged a cohesive single population with respect to its behavior for these four interest scales, yet behaving radically. This statistical analysis provided only one significant trend for linearity, that being a significance at the 5% level of confidence for the Clerical scale.

For the four interest areas, linear trends significant at the 1% level of confidence, three of them, namely, Outdoor, Persuasive, and Artistic followed expectations in accordance with hypotheses relative to the distribution of sub-group means as a consequence of differentials in visual acuity. The fourth scale showing a significant linear trend at the 1% level of confidence, namely, Computational, did not show compliance with expectations. The one interest scale which demonstrated linear trend at the 5% level of confidence was Clerical. This degree of significance was observed only after the radical Sub-Group 1 had been dropped from the schedule of analysis of variance. Even with Sub-Group 1 remaining in the distribution four of the five mean scores of the sub-group populations exceeded the Kuder mean, with only one, the most sighted population of the blind group, falling below this Kuder value. The remaining scales, Mechanical,

Scientific, Literary, Musical, and Social Service, while not showing statistically significant trends for linearity deserve, along with the other scales, somewhat more careful analytical attention, and all scales will be discussed one at a time in the following sections.

Visual Acuity and Outdoor Interests

Inspection of Table IV and Figure 3 reveal the very striking apparent and graphic linear trend as predicted. Here, as much as anywhere else, can be seen the effect of Sub-Group 1 behaving as two populations on the basis of apparently only slightly different levels of visual acuity designated as Nil, on the one hand, and L.P. on the other. Insofar as Outdoor activities are concerned there seems to be a vast difference between the preferences of these two smaller sub-groups, the Nil individuals (Figure 3) assuming expected linearity, while the L.P. individuals moved radically in the direction of the Kuder mean. The writer feels that a more careful ophthalmological examination of the L.P. group would likely reveal visual acuities, if exactly measured, considerably greater than indicated. If the L.P. group does have, for outdoor purposes vision more comparable to hioher visual acuity sub-groups, this apparently radical behavior simply becomes a manifestation of earlier predictions. In any

case, it is apparent that a steady increment occurs in Outdoor interest scores in a manner defined for this research as sight-ordered, i.e., the greater the degree of visual acuity the greater the interest in the Outdoor scale. As indicated in Table II the difference between the Kuder mean and the mean for Group B as a whole is significant at the 1% level of confidence.

Visual Acuity and Mechanical Interests

Inspection of Table IV and Figure 4 shows a flat distribution of means except for the radical departure for Sub-Group 3. Inasmuch as analysis of variance revealed relatively marked variance within the sub-groups it is extremely difficult, if not impossible, to interpret this distribution of means even if Sub-Group 3 were omitted. Separating Sub-Group 1 for Nil and L.P. classifications and discarding the L.P. group as for analysis of the Outdoor scale, simply produces a second radical departure from the apparent flat distribution of means by the small group of persons classified as Nil. Results here are truly inconclusive.

Visual Acuity and Computational Interests

It had been predicted that the means for sub-groups

defined in terms of visual acuity would be sight-ordered, i.e., the greater the degree of vision the greater would be the measured interests in Computational activities. Considering the blind experimental population (Group B) as a whole this obviously was the case, but the highly significant linear trend apparent after the second analysis of variance shows that the sub-groups making up this larger Group B behave in a manner diametrically opposed to expectations. This is to say, the most blind group (those classified as Nil) exhibited much greater interest in Computational activities than did the remaining four blind sub-groups of greater visual acuity, and greater interest than that represented by the Kuder mean for "men in general." Furthermore, the greater the visual acuity, the less interested were the sub-groups in Computational activities. These results tend to contradict not only the expectations of the present research, but also the findings of Hayes (1948) who indicated that his blind subjects "are more handicapped" in the Computational interest area. The writer is willing to speculate more in line with the reasoning of Forer (1955) that this is an instance where blindness, from the point of view of personality, assumes nosological characteristics. It may well be that persons who are severely visually handicapped, i.e., visual acuity more in the direction of Nil, find Computational activities more attractive by virtue

of the fact that they epitomize "higher level" activities more characteristic of the sighted world. Following this line of reasoning, the greater the visual acuity, still remaining within the limits of blindness, the less is the need for this type fantasy, and the more is it replaced by practical substitute behavior made increasingly available to blind individuals of higher visual acuity.

Visual Acuity and Scientific Interests

As indicated in Table II the difference between the Kuder mean and Group B as a whole is significant at the 1% level of confidence. Any attempt to make a detailed analysis of the mean values for the Scientific scale represented in Table IV and graphically depicted in Figure 6 cannot, at the present time, be rewarded with success. The marked variance within the sub-groups compared with variance between groups obscures any meaningful interpretation. It had been predicted that the distribution of means for the blind sub-groups would be sight-ordered, i.e., the greater the degree of vision, the greater would be the interest in Scientific activities. If anything, it appears that once again, as for Computational activities, the members of Group B experiencing more profound blindness tend to express greater interest in Scientific activities. The writer is tempted, once again, to advance the speculation that a certain element of fantasy

causes the severely impaired individual to identify himself with activities somehow representing "higher level" functions more commonly considered a part of the sighted world.

Visual Acuity and Persuasive Interests

Earlier predictions stipulated that the distribution of sub-group means of the blind experimental population would be blind-ordered, i.e., the less the measured visual acuity, the higher the measured interests in persuasive activities. Table IV and Figure 7 show the rather remarkable confirmation of this prediction. The Persuasive scale provides another instance in which Sub-Group 1 was divided meaningfully into two smaller populations differentiated on the basis of Nil and L.P. visual acuity. The Nil group assumes the expected linearity, while the L.P. group radically moves in the direction of the Kuder mean. Previous discussions of this phenomena may be applicable here. In any case, except for the puzzling behavior of the L.P. group, blindness seems to increase interest in Persuasive activities. The writer feels that the inevitable inferiority of blindness excites a need in blind persons to compensate for their feelings of inferior status by "selling themselves" in a Persuasive

manner. It also seems reasonable to recognize the fact here that Persuasive activities are largely dependent upon verbal ability, a field in which blind persons experience less of a handicap. As shown in Table II the difference between the Kuder mean and the mean of Group B as a whole is not statistically significant. Although it was not computed, it seems likely that a t for the difference between the Kuder mean and a mean calculated from individuals of lower visual acuity excluding the L.P. group, would indicate a statistically significant difference. Apparently the fact that blind individuals having greater visual acuity so closely approach the Kuder mean destroys any possibility of securing a statistically significant difference when the overall blind population (Group B) is considered.

Visual Acuity and Artistic Interests

As indicated by Table IV and Figure 8 the relationship between the Kuder mean and the means for the blind sub-groups is somewhat obscured by large variance existing within the sub-groups. Looking at the picture as a whole there seems little doubt but that the predicted relationship obtains, i.e., the sub-group means are sight-ordered in that the greater the degree of vision, the greater the interest in Artistic activities. Although eliminating the

L.P. group from Sub-Group 1 allows the mean for the Nil group to move further away from the Kuder mean (Figure 8), analysis of variance based upon this new set of means (the mean for the Nil group plus the four other sub-group means) apparently decreases the margin of statistical significance from the 1% to the 5% level of confidence. This result is caused by relatively high variance in the Nil population sample.

As indicated in Table II the difference between the Kuder mean and the mean of Group B is significant at the 1% level of confidence.

Visual Acuity and Literary Interests

Once again any possibility of drawing definite conclusions from the data shown in Table IV and depicted in Figure 9 concerning visual acuity and Literary interests is defeated by large variances existing within the sub-group populations. Even completely eliminating Sub-Group 1 whose mean radically departs from apparent linearity as depicted in Figure 9, does not allow for the discovery of a linear trend of statistical significance.

As represented in Table II and as predicted, there is a tendency for the blind population to exhibit higher Literary interests than that represented by the Kuder

mean, but this difference is not statistically significant.

Visual Acuity and Musical Interests

Although there is a tendency for Group B to be somewhat higher in Musical interests than that represented by the Kuder mean, this difference is not statistically significant. This trend, however, tends to satisfy the earlier predictions concerning the Musical scale. Analysis of variance of sub-groups made up of Group B does not indicate any significant trend of linearity as anticipated. From the data in Table IV, graphically depicted in Figure 10, it seems apparent that no one sub-group representing the different levels of visual acuity clearly stands out as more interested in Musical activities than members of other sub-groups.

Visual Acuity and Social Service Interests

Early predictions held that the distribution of means for sub-groups made up of blind individuals and defined in terms of visual acuity would be blind-ordered, i.e., the more severe the visual impairment, the greater the interest in Social Service activity. Although the overall picture seems to indicate that this is the case, the significance of the difference between the Kuder mean

and the mean for Group B lies beyond the 1% level of confidence, analysis of variance indicates results which are not entirely consistent with predictions. The data in Table IV and Figure 11, while assuming apparent significance, are, once again, obscured by high variances within the sub-groups. Even responding to the apparently radical behavior of Sub-Group 1 by dropping it out of the distribution and conducting an analysis of variance and test for linear trend on the remaining four sub-groups provided no statistically significant results. About all that can be said is that all blind sub-groups provided mean values which were considerably above the Kuder mean as predicted.

Visual Acuity and Clerical Interests

Except for the radical behavior of Sub-Group 1 (Table IV and Figure 12) the distribution of means of the blind sub-groups shows that these means are blind-ordered as predicted. The radical behavior of Sub-Group 1 caused it to be omitted in a subsequent analysis of variance. This omission revealed a trend toward linearity significant at the 5% level of confidence. Hayes (1948), finding the same overall results for this scale when he administered the Kuder Preference Record to blind high school boys, felt that the elevation of the mean score

for the blind group could be attributed to the vocational opportunities given them to train for typing and ediphone work. The fact that blind persons frequently are called upon to carry out clerical-type tasks in their day-to-day activities by using the typewriter, recording equipment, the Braille slate and stylus, and the Braille writer, as well as the Talking Book, may well explain the overall relationship between the means of the blind group and the sighted population. The writer can only speculate concerning the radical way in which the mean for Sub-Group 1 approaches the Kuder Mean. It may well be that persons experiencing blindness of the most profound type tend to have less interest in clerical activities than do persons with somewhat better vision. This proposition is not well supported by the distribution of means which occurs when Sub-Group 1 is sub-divided into Nil and L.P. groups. But continuing this same line of reasoning, it may be possible that blind persons making up sub-groups characterized by better vision have less interest in clerical activities because they are capable of engaging in more active activities such as measured by the Outdoor Scale.

Interests and Age at Onset of Blindness

Visual acuity is only one criterion by means of which vocational interests of blind individuals can be

analyzed with reference to experiential history and experiential possibilities. The age at onset of blindness is a time factor which, in terms of developmental sequence, has through prediction been vested with causal attributes. Just as for visual acuity the theoretical possibilities for sub-dividing a blind population into sub-groups defined by age at onset of blindness are numerous. For practical purposes the relatively small number of individuals included in Group B severely limited the manufacture of adequate sub-groups. Responding to a scatter-gram of individuals making up Group B, their scores having been tallied on a scale of age at onset of blindness and ranging from zero (birth) through age thirty-five, the writer elected to construct a sub-group of all individuals born blind. This provided an experimental population of forty-six individuals. Rather than using the remaining thirty-one cases as a population representing persons blinded at all ages other than birth, only the extreme segment of the age at onset of blindness continuum was used for analytical purposes. It was arbitrarily decided to include as representatives of a category of adventitious blindness those individuals losing their vision at age eighteen or later. It was hoped that this selection of relatively extreme cases would give a clearer picture of the effect of age at onset of blindness upon interest patterns. The result of this division was

largely arbitrarily derived, but it was also suggested by the fact that increasing stability of measured interest is apparent as the eighteenth year of age is approached (Mallinson and Crumrine, 1952; and Reid, 1951). Strong (1948), discussing the stability of interests in a population of young adults states:

> Interests change somewhat between 15 and 23 years of age, one-third of the change occurring between 15.5 and 16.5, one-third between 16.5 and 18, and the remainder between 18 and 23 years (p. 605).

The means of these two blind sub-groups, one defined in terms of having been born blind, the other composed of individuals blinded at age eighteen or later, appear in Table V, along with the t values for the significance of differences between these means as well as differences between each of these means and the means for the Kuder norm group. Of the ten interest scales, differences between the means of the sub-group born blind and the Kuder norm group were found to be statistically significant at the 1% level of confidence for three scales, and at the 5% level for three scales. Differences significant at the 1% level were found for the Computational, Scientific, and Social Service scales, while the 5% significance was found for the Outdoor, Artistic, and Musical scales. All of these differences occurred in the predicted direction, i.e., for blind-appropriate scales the means

TABLE V. MEANS AND t VALUES FOR SUB-GROUPS DEFINED IN TERMS OF AGE AT ONSET OF BLINDNESS

Interest Area	Kuder N= 1000	t	Born Blind N= 46	t	Blinded Age 18+ N= 15	t	Kuder N= 1000
0- Out	43.45	2.4823#	37.89	.7700	40.87	.6675	43.45
1- Mec	43.60	.0928	43.78	.3527	44.87	.3776	43.60
2- Com	28.31	3.4491*	23.78	.7075	25.20	1.3737	28.31
3- Sci	39.98	3.0394*	35.22	1.2972	38.60	.5100	39.98
4- Per	41.13	1.3720	44.13	.6774	41.73	.1583	41.13
5- Art	22.85	2.1693#	19.91	.1050	20.13	1.1592	22.85
6- Lit	19.62	.8850	20.70	.7223	19.20	.1988	19.62
7- Mus	12.38	2.0213#	14.37	3.5519*	7.33	3.0066*	12.38
8- Soc	41.96	3.5710*	48.80	2.1428#	56.07	4.2645*	41.96
9- Cle	46.04	.8670	47.70	.8100	44.73	.3966	46.04

*= 1% Level
#= 5% Level

were blind-ordered, and for sight-appropriate scales the means proved to be sight-ordered. For all other scales, namely, Mechanical, Persuasive, Literary, and Clerical, differences between means occurred in the predicted direction, but these differences were not found to be statistically significant.

The fact that those individuals blinded at age eighteen and later are more similar to "men in general" than are individuals born blind is illustrated by the fact that significant differences exist between the mean of this adventitiously blinded group and the Kuder norm population for only two scales, namely Musical and Social Service, both differences being significant at the 1% level of confidence. For the Musical scale the direction of this difference is inconsistent with expectations, the mean of the sub-group blinded later in life being surprisingly lower than the Kuder mean. The difference for the Social Service scale was in the predicted direction, i.e., the mean of the sub-group blinded later in life was found to be higher than the Kuder mean. The fact that the mean value for the blind sub-group losing their vision later in life falls well below the Kuder mean seems to defy interpretation. The fact that early blindness tends to elevate interest in the musical area has been previously anticipated and discussed. It is worth noting here that whereas the overall blind experimental population (Table II) showed a tendency toward higher

Musical interests than represented by the mean of the Kuder norm group, this difference was not found to be statistically significant. Following the partition of Group B, however, individuals blind at birth were significantly different in the predicted direction at the 5% level of confidence. It becomes clear that the relatively low interests of individuals blinded later in life caused a marked depression of the Group B mean, tending to nullify the prediction for a blind-ordered relationship.

Interests and Percent of Life Blind

The division of Group B into two segments, one defined as blind 100% of life, the other as blind 33% of life or less, rather arbitrarily derived provided a selection of cases practically identical with those selected for analysis in the previous section Age at Onset of Blindness. It is immediately apparent that a group of individuals blind 100% of their lives would be composed of the same individuals making up a group born blind. For this reason the group blind 100% of life of the present section is identical to the group born blind of the previous section, and the t values for the differences between the means of this group and the Kuder means are identical. The fact that the group blind 33%

of life or less differs only by dropping out two cases and adding two others to meet the definitive limits offers little opportunity for differential analysis on the basis of percent of life blind. The only change of significance of differences occurring between populations analyzed in terms of percent of life blind and populations analyzed in terms of age at onset of blindness occurred for the Social Service scale (Table VI). The present analysis reveals no new significant differences between individuals blind 100% of their lives and individuals blind 33% of their lives or less.

It seems apparent that more satisfactory analytical methods would call for a technique of analysis of variance within and between three groups in order to account for relationships between populations defined in terms of age. Age of onset of blindness and percent of life blind would lend themselves to an analytical method recognizing the fact that three chronological points in time may be functionally significant. These would be birth, delimiting a group born blind; age at onset of blindness, delimiting persons blinded later in life; and age at testing, thereby providing an upper age limit.

Type of Educational Experience and Interests

Predictions stipulate that educational experience

TABLE VI. MEANS AND t VALUES FOR SUB-GROUPS DEFINED IN TERMS OF PERCENT OF LIFE BLIND

Interest Scales	Kuder N= 1000	t	Blind 100% N= 46	t	Blind 33%- N= 15	t	Kuder N= 1000
O- Out	43.45	2.4823#	37.89	.7296	40.73	2.1509#	43.45
1- Mec	43.60	.0928	43.78	.3947	45.33	.5158	43.60
2- Com	28.31	3.4492*	23.78	1.0775	26.00	1.0204	28.31
3- Sci	39.98	3.0394*	35.22	1.4452	38.93	.3883	39.98
4- Per	41.13	1.3720	44.13	.4781	42.40	.3347	41.13
5- Art	22.85	2.1693#	19.91	.0879	19.73	1.3308	22.85
6- Lit	19.62	.8850	20.70	.8783	18.93	.3270	19.62
7- Mus	12.38	2.0213#	14.37	3.0844*	8.00	2.6008*	12.38
8- Soc	41.96	3.5710*	48.80	1.1630	52.80	3.2741*	41.96
9- Cle	46.04	.8670	47.70	.3230	46.53	.1485	46.04

*= 1% Level
#= 5% Level

expressed in terms of the influence upon blind persons having been educated in the institutional setting of a school for the blind on the one hand, and blind persons educated in public school on the other, will significantly influence interest patterns.

For the purpose of this analysis it was decided to set up two blind populations from Group B, one having received 100% of educational experience in a school for the blind, and the other having received 100% of education in public school. Immediately it is apparent that this sort of group definition cannot be maintained as a pure expression of educational experience per se. In the first place the likelihood is great that persons receiving all of their educational experience in a school for the blind have either been born blind or blinded very early in life. In addition, individuals educated at a school for the blind over such a long period of time are very likely individuals suffering from more profound degrees of blindness, particularly since a tendency exists for parents to avoid sending their children to a school for the blind if there is a remote chance that their residual vision will allow them to compete in public school. It naturally follows that blind individuals receiving their education 100% in public schools are necessarily blinded in later life, or have sufficient residual vision to allow them to compete educationally as sighted individuals. Nevertheless

it was felt that such a selection, in spite of the impurity of the manner in which the group related to its definition, would provide fruitful results. For this purpose, then, all appropriate blind persons of Group B were set up as components of two sub-groups, one made up of individuals educated 100% in a school for the blind, with eighteen individuals, while all individuals receiving 100% of their education in public school were put into a group of thirty-five individuals.

Moser (1952), in a study of the influence of cultural factors upon selection of vocational preferences by high school students, concluded that the cultural atmosphere of the home and parental example and training played an important part in influencing young people in their selection of vocational preferences. The blind student educated in a school for the blind, largely deprived of this home atmosphere and parental example, might be expected to reflect these deprivations as differences in measured vocational interests. Cutsforth (1950), in a discussion of the general effect of educational experiences in schools for the blind states:

> It is a common observation of vocational workers for the blind that the greatest problems in vocational adjustment are found in the individuals who have received their education in institutions for the blind. There are two explanations for this situation, each of which contributes its share. No doubt the parental type of supervision practiced in an institution as well as the lack of opportunity to develop aggressive social attitudes contributes much. It is also true that those who have attended

> educational institutions for the blind have lost their sight at an earlier age and have been developing much longer in the direction of emotional incapacitation than those who lose their sight after attaining maturity (p. 183).

Table VII summarizes the results for the purpose of analysis. For all interest scales the relationship between the Kuder mean and the mean of the blind population educated 100% in a school for the blind is as predicted, i.e., scales judged to be blind-appropriate reveal mean relationships which are blind-ordered, while scales judged to be sight-appropriate reveal mean relationships which are sight-ordered. Of the ten scales differences significant at the 1% level of confidence are found for four scales, namely, Outdoor, Computational, Scientific, and Artistic. A difference at the 5% level of confidence was found for the Clerical scale. Differences between the school for the blind group and the public school group were compatible with predictions in every instance except one, although these differences were statistically significant for only two scales, a difference significant at the 1% level of confidence for Clerical, and a difference significant at the 5% level for Artistic. The Artistic relationship between these two blind sub-groups was found to be sight-ordered as predicted, while the difference for the clerical scale was found to be blind-ordered as predicted. The one scale which showed a mean relationship not compatible with predictions was the Social Service scale where a slight trend is observed for the individuals

TABLE VII. MEANS AND t VALUES FOR SUB-GROUPS DEFINED IN TERMS OF TYPE OF EDUCATIONAL EXPERIENCE

Interest Scales	Kuder N= 1000	t	100% School for Blind N= 18	t	100% Public School N= 35	t	Kuder N= 1000
O- Out	43.45	2.5763*	34.33	1.5057	40.29	1.2364	43.45
1- Mec	43.60	.5498	45.28	.9077	41.83	.7983	43.60
2- Com	28.31	2.5967*	22.94	.7557	24.46	2.5800*	28.31
3- Sci	39.98	3.6898*	33.50	1.3009	37.03	1.6439	39.98
4- Per	41.13	1.6020	46.67	1.0580	43.03	.7597	41.13
5- Art	22.85	2.9653*	16.50	2.3599#	20.83	1.3070	22.85
6- Lit	19.62	1.3455	22.22	1.5335	19.06	.4020	19.62
7- Mus	12.38	1.7585	15.11	1.6778	11.46	.8230	12.38
8- Soc	41.96	1.8510	47.56	1.7721	53.57	5.3082*	41.96
9- Cle	46.04	2.4736#	53.50	2.8034*	43.83	1.0128	46.04

*= 1% Level
#= 5% Level

educated in public school to have higher interests in Social Service activities than individuals educated 100% of the time in a school for the blind. By comparing the results in Table II for the Social Service scale with those of Table VII it seems apparent that the largest share of the responsibility for the marked significance of the difference between the relatively high interest of blind persons in Social Service activities is attributable to those individuals who are blind, but who can be described in terms of characteristics belonging to blind individuals educated 100% in public schools. This tends to show that individuals possessing characteristics requiring that they be educated in a school for the blind for their entire educational course are less inclined to react positively to Social Service activities than are individuals of public school experience. From this it may follow that school for the blind experience, along with characteristic visual attributes of these individuals, disposes them to accept help from others without being motivated to give help to others. It should be pointed out that comparison of the means of the group educated 100% in public school with the Kuder means reveals the fact that this blind sub-group is considerably more similar to "men in general" than is the case for blind persons educated 100% in a school for the blind.

Expressed and Measured Interests

According to predictions sighted persons were expected to make more statements of expressed interests which would be found to be compatible with their measured interests than would be the case for the blind experimental populations. By transposing expressed interests into D.O.T. job titles and comparing these jobs with the measured interests on the Kuder Preference Record each subject was coded as "agree" when it was judged that the measured and expressed interests were compatible, and "disagree" when it was judged that the measured and expressed interests were incompatible. To aid in this judgement descriptions of jobs from the Dictionary of Occupational Titles as well as similar information in the Kuder Manual was used.

The results of this procedure are summarized in Table VIII. According to these findings the prediction that less agreement would exist between expressed and measured interests of blind persons cannot be supported. Apparently the dynamic processes which make for expressed and measured interests do not make for results peculiar to either of the experimental populations.

With respect to the stereotyping of expressed interests, it appears that the blind population provided results in accordance with expectations, and showed a rather clear

TABLE VIII. AGREEMENT BETWEEN MEASURED AND EXPRESSED INTERESTS OF BOTH BLIND AND SIGHTED SUBJECTS

	Blind		Sighted	
	No.	%	No.	%
Agree	58	75	43	73
Disagree	17	22	16	27
Unclassified	2	3	0	0

restriction in the number of different job titles. The sighted population of fifty-nine individuals expressed interests in forty-four different job titles. On the basis of this relationship the seventy-seven blind individuals could be expected to express interest in fifty-seven different job titles. Instead of the fifty-seven, however, the blind population named only forty-five different occupational titles.

The complete list of expressed occupational interests and D.O.T. titles appears in Appendix G.

For the sighted population there seems to be a definite tendency for clustering around engineering professions. Seven sighted persons chose engineering, while only two blind persons indicated this field as their preferred occupation. A very strong clustering effect seems to be observable in the blind population about job titles which are typified by social service activities. In this area six blind persons chose vocational counseling, while none of the sighted group indicated this profession; eight other blind persons chose occupations in related fields including two case workers, one case worker aide, two occupational therapists, one physical therapist, one physician, and one psychiatric social worker. Of the sighted population only one individual indicated physician as his preferred profession, and no related occupations were indicated. Ten members of the blind population expressed interest in becoming a teacher at either high

school or college level, with only three of the sighted population indicating this profession as their choice. Four blind subjects expressed interest in sales work, while none of the sighted population made this choice. On the other hand four sighted individuals were willing to assume the responsibility of "manager" while only one blind subject chose this field. Seven sighted individuals chose bookkeeping or accounting, while none of these positions were indicated by members of the blind sample. Three sighted individuals chose clergyman and two blind subjects made the same selection. Five individuals in each population chose some sort of mechanic job. Two sighted individuals chose truck driving while no such choice appeared for the blind population. Similarly, only two sighted people selected law enforcement jobs. One sighted person and two blind persons chose to be writers. The positions of architect, draftsman, photographer, and artist were chosen one each by members of the sighted population, with only one blind person indicating photography as his preferred occupation. One sighted subject wished to be a radio sports announcer, a job which definitely requires active visual participation, while three blind individuals chose the profession of radio announcer. Five blind subjects chose occupations dealing with music, including two piano tuners, whereas none of the sighted population indicated music or music related

activities as a preference. A cluster of three blind individuals indicated mattress making as their first choice, but none of the sighted population seemed to be aware of the existence of this occupation. Three blind persons elected lawyer as their profession, with no such selection appearing for the sighted group. Two blind persons selected masseur. Job titles expressed by one member of the sighted population, and not duplicated in the blind population include barber, aircraft pilot, sheet metal fabricating machine operator, general office clerk, floor layer, electrical accessories assembler, carpenter, geologist, paper reel operator, and furniture assembler. Those jobs chosen by one blind person and not duplicated for the sighted population are school principal, labor relations specialist, construction laborer, general machine operator, waiter, knitting machine operator, filling station attendant, and two not classifiable because of vagueness.

There seems to be a strong tendency for blind persons to express interest in occupations embraced by measured interest areas previously classified as blind-appropriate. One cluster of job titles which is seemingly a contradiction upon first glance appears in the fact that four blind persons indicated farming and farm related activities while only two sighted persons chose these areas. This probably reflects economic status, experience, and lack

of opportunity for employment elsewhere more than interest in Outdoor activities per se.

Testing Time

Hayes (1948) and Quimby (1944) both indicate methods requiring testing times in the magnitude of two hours to administer the Kuder Preference Record to blind subjects. Methods described by both of these authors make it possible for several blind persons to be tested at once while a sighted reader reads the Kuder Preference Record aloud, but this apparent efficiency does not alleviate the extreme fatigue effect felt by the subjects. Hayes suggests that testing be done in two sessions of approximately one hour each. This is a practice which produces unpredictable effects.

The writer, using methods in early applications of the Kuder Preference Record to vocational counseling problems with blind subjects, found that approximately two hours were required to read the test to these subjects and record their choices.

Appendix E provides a complete list of time scores for each sighted and blind subject. Summarizing these time values it was found that testing time for the sighted population was 48.58 minutes, with a range from 36 to 64 minutes. For the blind population average testing time

was 51.30 minutes, with a range from 38 to 94 minutes. Two individuals of this latter population tended to be extreme, one requiring 94 minutes and the other requiring 80 minutes to complete the test. Omitting these two extreme cases, the range for blind persons is from 38 to 66 minutes; average testing time 50.35 minutes.

From these values it is readily seen that testing time has been reduced from the two hours anticipated by Hayes' and Quimby's methods to less than one hour, a value anticipated by Kuder when the test is used in the normal manner with sighted subjects.

Chapter VI

SUMMARY AND CONCLUSIONS

The primary purpose of this study has been to investigate the way in which blindness and certain concomitant conditions of blindness influence measured patterns of vocational interests on the Kuder Preference Record, Vocational. Predictions were formulated in an attempt to point up the specific effects upon interests of visual acuity, age at onset of blindness, percent of life blind, and educational experience. For this study special techniques were devised to make the Kuder Preference Record equally available to blind and sighted populations, and special attention was paid the relative stability of the Kuder preference Record administered by means of these racically different methods with both blind and sighted population samples. As a further study of the effect of this new methodology and instrumentation, measured time

for the test administration was held to be an important index to the efficiency of the new method. A final phase of studying the general applicability of these new methods to blind populations included the investigation of the acceptance-rejection attitudes of blind subjects toward the testing instrument and the requirements of the test schedule.

It was also deemed desirable to study the relationship between measured and expressed interests of blind and sighted groups.

Responding to logically derived hypothetical antecedents discussed in terms of experiential history as controlled by blindness and certain concomitant conditions of blindness, specific predictions were set forth relating these experiential controls and their effect upon experience and hence upon interest formulation to the magnitude and direction of measured interests of blind and sighted groups. Seventy-seven blind white rehabilitation clients ranging in age from eighteen through thirty-five and fifty-nine white male subjects applying for employment at an office of the Employment Security Commission, also ranging in age from eighteen through thirty-five, were given the Kuder Preference Record. In addition they were given a brief information questionnaire and the Verbal portion of the Wechsler Intelligence Scale. These latter two questionnaires were administered for the purpose of providing descriptive data.

The main results of the study may be summarized as follows:

1. One of the most noteworthy findings of the study is the remarkable similarity between the interest patterns of blind persons and those of both the sighted experimental population and the Kuder norm group. Whereas significant differences are frequently discoverable, the overall tendency for the distribution of means of these three populations is to remain remarkably similar.

2. There seems to be a real tendency for blind persons to obtain generally higher scores in those areas judged to be blind-appropriate, namely, Mechanical, Persuasive, Literary, Musical, Social Service, and Clerical activities. Many of these differences are statistically significant at the 1% level of confidence, and others at the 5% level. In other instances where statistically significant results are not observed the trend seems apparent.

3. The most revealing differences between means of sub-groups made up of blind individuals and the mean for the Kuder norm group were observed when the blind sub-groups were defined in terms of educational experience. Defining sub-groups in these terms compounds educational experience, age at onset of blindness, and degree of blindness, and for this reason bring to focus these various definitive possibilities upon a selection of blind individuals who behave, according to predictions, more as "truly blind" individuals.

4. The Kuder Preference Record retained remarkably high stability as measured by the Kuder-Richardson technique

for estimating reliability, when used with blind subjects and when administered by means of radically different testing methods.

5. The blind population tended to be considerably more restricted than the sighted population in the number of different occupational titles expressed as preferred occupations. The expressed job titles for the blind population followed, for the most part, the same predicted pattern as for measured interests, i.e., job titles of this blind group, in the great majority of cases, were appropriate to interest areas which had been judged to be blind-appropriate. A tendency exists for expressed interests of blind persons to cluster about jobs stereotyped in the employment of blind persons. The sighted population showed greater diversification of job titles.

The degree to which expressed and measured interests of the sighted and blind populations were found to be in agreement seemed to be approximately the same. Test validity reflected in this finding shows no difference between such validity for the two experimental groups.

6. A comparison of time required for administering the Kuder Preference Record by requiring a test administrator to read the test blank aloud to blind persons and record answers for blind subjects, by requiring a test administrator to read the test aloud and heve the subjects record their answers by means of the Hayes Dot Sheets,

and by means of the electro-mechanical instrument and technique devised for this study indicates that testing time is cut from two hours to a mean of 51.30 minutes for the entire test administration. This compares favorably with the 40 minutes or slightly longer anticipated by Kuder for sighted high school students.

7. The attitudes of blind subjects toward the new testing instrument and technique were, for all cases, characterized by strong acceptance reactions, and in no single case were there indications that the method met with the disapproval of a blind subject. These subjects frequently spontaneously indicated they enjoyed the fact that the method did not require dependency upon others, and many of the blind subjects applauded the fact that they were left free to work alone in the testing situation. The sighted subjects, on the other hand, looked upon the testing instrument and the testing method as novel and interesting, but when presented with the alternative of being allowed to read the test blank themselves and make their responses in the usual manner, universally elected this latter method.

The complexity of the electro-mechanical design of the testing instrument in its present form is a disadvantage to the general application of the technique on a larger scale.

These findings point up the fact that the Kuder

Preference Record administered in the manner described in this study is a very acceptable instrument for measuring the vocational interests of blind individuals. It is also inescapably apparent that certain dynamic relationships exist between various types of blind persons and their manifest responses to this interest profile. The present study is not designed to clarify the antecedents and the consequents involved in this relationship; however, the results do suggest that the basic differences found to exist between blind and sighted groups can summarily be attributed to differentials in experience.

The significance of the present results for incorporation into a personality theory of blindness depends largely upon the assumption that experiential history as determined by conditions of blindness, rather than these conditions of blindness per se contribute significantly to the formulation of vocatioral preferences. The uncertain tenor of these relationships indicates that the present study takes us only a short way toward understanding the intricate interrelationships of many variables affecting the formulation of vocational preferences, particularly with respect to blind individuals. There is an apparent need for continuing this study in a manner which would introduce more exact understanding of the role of experience as such. In addition the number of blind persons involved in this study is altogether inadequate for providing a

basis for conclusions attributable to blind persons as a whole. An increase in the number of blind subjects, possibly extending the age range, and incorporating data from an experience record, followed by more adequate statistical treatment largely characterized by expanded techniques of analysis of variance will very likely serve to clarify positions which must remain hypothetical for the present study.

APPENDIXES

Appendix A

Instructions

The present research is designed to contribute to a study of the best methods of measuring the vocational interests of blind people. You have been asked to participate in this study not so much because we are interested in your individual responses, but because it is desired to collect a large number of responses of various people so that these new testing methods can be standardized. I will run through two questionnaires with you, after which I will ask you to operate a new instrument which has just been developed for our use.

The information questionnaire and the Verbal portion of the Wechsler Intelligence Scale were administered following these initial instructions. Comment and instructions were those stipulated by the wording of the information questionnaire and by the Wechsler text. Following the administration of the Wechsler Scale the subject was shown the electro-mechanical testing instrument, and the instructions continued as follows:

This is the new instrument which I mentioned at the beginning of our interview. It will be used later to administer a standard measure of job interests and vocational interests to blind persons in a standard manner. It allows us to get away from using Braille because reading with the fingers is often too slow, and persons who have been blind for only a short period of time cannot usually read Braille. As you can see, the instrument consists of three parts: this three-button keyboard, this tape deck and loudspeaker, and this portion which contains a mechanism for stopping and starting the tape deck and for recording your answers as you press them into the keyboard.

The tape deck will read the test items aloud to you. Each item will consist of three phrases or sentences. As you hear these three phrases look at the keyboard and

assign these three phrases one at a time as you hear them to the three buttons on the keyboard. You will notice that the buttons are marked by one, two, and three raised dots to correspond with the first, second, and third phrases of each test item.

Let's suppose that the tape deck will read, "Had you rather climb a mountain, swim in a lake, or row a boat?" As you hear these three possibilities assign the first one to button one, the second one to button two, and the third one to button three. After all three have been presented the machine will automatically shut off and wait for you to make your response. At this point I want you to press the button belonging to the phrase which you would like to do most. Do you understand?--- When you push the button belonging to the phrase you would like to do most, then I want you to push the button belonging to the phrase you would like to do least, or the one you would dislike doing most. Is this clear?--- When you press these two buttons a record will be made of your choices which can later be scored. Following your second button selection the tape deck will automatically start and you will hear the next three phrases. You will respond to these just as before. There will be 168 triplets. When the test is over the recorded voice will tell you that you have finished. I'll be working in the next office and you can call me.

I will time your work with a stopwatch, not because I want you to hurry, but simply because I want to know the average time it takes for all subjects to take the test. Do not feel that you should hurry, for you can have all the time you like. No credit is earned by finishing the test hurridly.

I will remain with you for the first five test items to be sure that you are comfortable with the method. We can talk about these first items before you press the buttons if you like. You may find that it seems difficult to remember all three phrases at once, but soon you will see that this is not a difficult task. You simply must set your mind to it and it will soon come naturally. After the first five items I will leave you to work alone. Call me at any time if you need me.

The test that the tape deck and loudspeaker will be reading actually should not be called a test at all,

for there are no right or wrong answers except as how you feel about the items. There are no good or bad answers; I simply want to know how you feel about doing the tasks described in the items. The results of the test will be plotted as an interest profile showing your interests in ten different areas. You will be given a copy of these results, and I will be glad to talk with you about them. I think you will find them interesting.

You will probably find that in some cases you will like all three activities about the same, and in others it may be that you will not like any of them. In such cases please force yourself to make the necessary choices of most and least liked.

If you press the wrong button it will not be possible for you to change your answer, so please exercise reasonable care in making your selections. If you do make an error it will not be too important because it will simply be lost in the many questions. It will be best, however, if no errors are made.

Are there any questions?

Following these instructions and any discussion called for by the subject, the testing instrument was started. The writer remained with the subject through the first five items, after which the subject was left to work alone. At the conclusion of the test the subject was told that he would receive a test profile through the mail within four weeks, he was thanked for his participation, and the interview was terminated.

Appendix B

Information Questionnaire

Case No._____

Name_____ Age_____ Sex_____ Race_____

Home Address_____

Home County_____ Case Worker_____ Counselor_____

Business or School Address_____

Preferred Job_____

_____

Educational History: Public School 1 2 3 4 5 6 7 8 9 10 11 12

School for the Blind 1 2 3 4 5 6 7 8 9 10 11 12

College 13 14 15 16 Graduate 17 18 19 20

Occupational History_____

_____

_____

_____

Visual Acuity:

Distant-
Right_____

Left_____

Date_____

Near-
Right_____

Left_____

Date_____

Diagnosis_____

_____

_____

Describe Angular Vision_____

_____

Age of Onset of Blindness_____

Describe Onset and Progress of Blindness_____

_____

Appendix C

Medical Eye Report Form

(Note: So that an exact copy of the Medical Eye Report might be available to the reader it was decided to bind such a form in this volume. Inasmuch as the printed form does not conform with margin spacing necessary for binding, two copies of this form are bound together with the sides containing medical information facing each other. This will allow the reader to read both the extreme right and extreme left margins of this form. Although space is provided on the printed form for an optometric report, at no time were optometric findings used in this research.)

126
Duplicate

NORTH CAROLINA
STATE COMMISSION FOR THE BLIND

OPTOMETRIST'S REPORT ON EYE EXAMINATION
(To determine Eligibility for Aid to the Blind)

Applicant's name _____ Sex___ ____ Race_____
(Parent's name if Child)

Address _____
(Municipality) (County) (State)

Date of birth _____ Age at onset of blindness: Right eye _____ Left eye _____

Describe appearance of the eyes:

CENTRAL VISUAL ACUITY: Use snellen Notation in recording vision 20 200, 10 200. If vision is sufficient to record in numerical values; if not, record L.P. (Light Perception), H M. (Hand Movements) or blind if no light perception.

VISION:

Without Glasses	With Old Glasses			Prescription			Visual acuity with best correction:
				Sphere	Cylinder	Axis	
Rt. Eye	Rt Eye		R				Rt. Eye
			L.				
L. Eye	L. Eye	A	R				L. Eye
		D					
		D	L.				

VISUAL FIELDS: Record degree of limitation in widest diameter: Rt eye _____ Lt. eye _____

Can vision be improved? Yes _____ No _____ Are glasses recommended? Yes _____ No _____

Do you think that patient should be referred to an eye physician?

Remarks _____

Date of examination _____ O.D.
(Signature and address of examining optometrist)

Data below to be filled out by State Supervising Ophthalmologist for Eligibility for A.B. Payment:

(1) I approve for AB Payments on basis of vision _____
(2) I do not approve for AB Payments on the basis of vision _____
(3) I recommend re-examination to determine continuing eligibility _____
(Date)

_____
(Signature of Supervising Ophthalmologist)

BA-2 Revised
(5-1-56)

DATE
SOC. SER. DPW.
MED DIV. PRN
REHAB. COUNS.
School for Blind H.D.

Indicate Status: ( ) AB Applicant ( ) AB Recipient ( ) Rehabilitation ( ) Other

North Carolina State Commission for the Blind

PHYSICIAN'S REPORT ON EYE EXAMINATION

Applicant's name _____ Sex _____ Race _____
(Parent's name if child)

Address _____ (Street and number) _____ (Municipality) _____ (County) _____ (State)

Date of birth _____ Age at onset of blindness: Right eye _____ Left eye _____

DIAGNOSIS: _____

Describe appearance of eyes, including fundi: _____

CENTRAL VISUAL ACUITY: Use Snellen Notation in recording vision 20/200, 10/200 if vision is sufficient to record in numerical values; if not, record L. P. (Light Perception), H. M. (Hand Movements) or Blind if no light perception.

VISION:

Without Glasses	With Old Glasses	Refraction (Cycloplegic) (Manifest) Check type	Sphere	Cylinder	Axis		Prescription	Sphere	Cylinder	Axis	Visual Acuity Upon Discharge
Rt. Eye	Rt. Eye	R					R				Rt. Eye
L. Eye	L. Eye	L				A	L				L. Eye
						D	R				
						D	L				

Retinoscopy: Rt. Eye _____ Left Eye _____

Is there any limitation in field of vision? No _____ Yes _____

Record degree of limitation: Right eye _____ Left eye _____

Etiology of eye condition: _____

Prognosis: (Is there any likelihood that vision could be restored?)

Recommendations: Treatment—specify type and indicate length of time _____

Remarks: _____

Date of examination _____ When should patient be re-examined? _____

_____ M. D.
(Signature of examining physician) (Address of examining physician)

Data below to be filled out by State Supervising Ophthalmologist for Eligibility for A. B. Payment

(1) I do approve _____ do not approve _____ for AB Payment on basis of vision _____

(2) I recommend re-examination to determine continuing eligibility _____ (Date)

_____
(Signature of Supervising Ophthalmologist)

BA-2 Revised
(5-1-56)

DATE
SOC. SER. DPW
MED DIV. PRN
REHAB. COUNS.
School for Blind H.D.

Indicate Status: ( ) AB Applicant ( ) AB Recipient ( ) Rehabilitation ( ) Other

North Carolina State Commission for the Blind

PHYSICIAN'S REPORT ON EYE EXAMINATION

Applicant's name (Parent's name if child) Sex Race

Address (Street and number) (Municipality) (County) (State)

Date of birth Age at onset of blindness: Right eye Left eye

DIAGNOSIS:

Describe appearance of eyes, including fundi:

CENTRAL VISUAL ACUITY: Use Snellen Notation in recording vision 20/200, 10/200 if vision is sufficient to record in numerical values; if not, record L. P. (Light Perception), H. M. (Hand Movements) or Blind if no light perception.

VISION:

Without Glasses	With Old Glasses	Refraction (Cycloplegic) (Manifest) Check type:				Prescription				Visual Acuity Upon Discharge
			Sphere	Cylinder	Axis		Sphere	Cylinder	Axis	
Rt Eye	Rt Eye	R				R				Rt Eye
L. Eye	L. Eye	L.				L.				L. Eye
						D R				
						D L				

Retinoscopy: Rt. Eye Left Eye

Is there any limitation in field of vision? No Yes

Record degree of limitation: Right eye Left eye

Etiology of eye condition:

Prognosis: (Is there any likelihood that vision could be restored?)

Recommendations: Treatment—specify type and indicate length of time

Remarks:

Date of examination When should patient be re-examined?

M. D.

(Signature of examining physician) (Address of examining physician)

Data below to be filled out by State Supervising Ophthalmologist for Eligibility for A. B. Payment

(1) I do approve do not approve for AB Payment on basis of vision

(2) I recommend re-examination to determine continuing eligibility (Date)

(Signature of Supervising Ophthalmologist)

NORTH CAROLINA
STATE COMMISSION FOR THE BLIND

OPTOMETRIST'S REPORT ON EYE EXAMINATION
(To determine Eligibility for Aid to the Blind)

Applicant's name _____ _____ Sex___ _____ Race_____
(Parent's name if Child)

Address _____ _____ _____ _____
(Municipality) (County) (State)

Date of birth Age at onset of blindness: Right eye Left eye

Describe appearance of the eyes:

CENTRAL VISUAL ACUITY: Use snellen Notation in recording vision 20 200, 10 200, if vision is sufficient to record in numerical values; if not, record L.P. (Light Perception), H.M. (Hand Movements) or blind if no light perception.

VISION:

Without Glasses	With Old Glasses	Prescription				Visual acuity with best correction:
			Sphere	Cylinder	Axis	
Rt Eye	Rt Eye	R				Rt. Eye
		L.				
L. Eye	L. Eye	A R				L. Eye
		D				
		D L.				

VISUAL FIELDS: Record degree of limitation In widest diameter: Rt eye Lt eye

Can vision be improved? Yes No Are glasses recommended? Yes No

Do you think that patient should be referred to an eye physician?

Remarks

Date of examination O.D.
(Signature and address of examining optometrist)

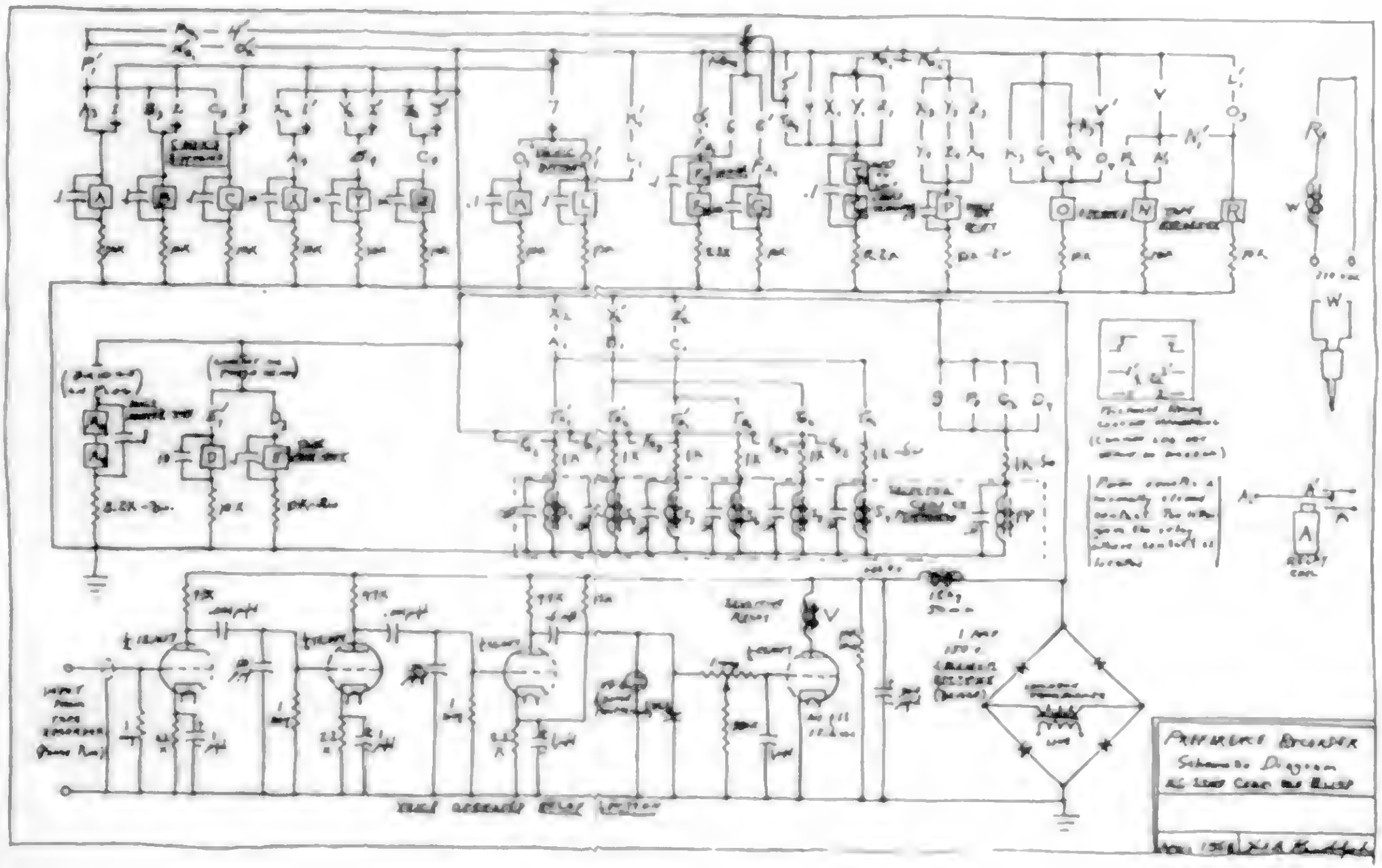
Data below to be filled out by State Supervising Ophthalmologist for Eligibility for A.B. Payment:

(1) I approve for AB Payments on basis of vision
(2) I do not approve for AB Payments on the basis of vision
(3) I recommend re-examination to determine continuing eligibility _____
(Date)

_____
(Signature of Supervising Ophthalmologist)

Appendix D

Diagram of Testing Instrument


PHYSICS BUILDER
Schematic Diagram

Appendix E

Data Sheet
Blind Subjects

No	Kuder Scales V	O	1	2	3	4	5	6	7	8	9	IQ	Education Pu	Bl	Co	Acuity R	L	Ag Bl	Ag	Test Time
1	41	8	25	38	27	76	7	20	7	54	67	118	12	0	15	200	LP	0	22	38
2	42	40	53	16	34	49	22	15	18	52	47	124	0	12	0	Nil	LP	5	19	40
3	36	52	37	20	28	37	23	19	25	59	53	81	0	6	0	200	200	6	18	44
4	40	46	53	19	33	40	32	12	22	40	37	99	4	9	0	VF	400	0	18	46
5	35	50	42	35	45	41	11	10	4	53	61	107	12	0	13	200	200	11	19	43
6	39	29	40	22	42	43	15	18	29	45	51	107	0	11	0	VF	VF	0	18	58
7	39	26	55	19	40	50	10	28	4	42	63	107	0	12	0	200	200	0	18	42
8	40	36	29	33	39	31	27	31	14	51	41	123	4	12	13	200	400	0	20	49
9	40	18	61	38	46	63	17	23	7	32	54	119	9	12	16	Nil	LP	15	22	52
10	40	48	46	25	32	47	29	12	16	40	49	98	10	0	0	200	200	0	21	42
11	41	23	53	20	30	43	11	41	10	50	51	124	8	12	17	Nil	LP	14	25	46
12	36	43	32	19	42	51	19	13	10	59	38	90	5	0	0	400	LP	24	34	50
13	35	47	48	18	29	48	15	20	18	53	52	107	0	10	0	200	200	0	35	50
14	37	44	48	23	23	51	18	27	8	46	54	106	3	0	0	50	20	19	28	63
15	41	39	55	28	51	31	29	12	10	65	29	117	12	0	13	20	15	19	34	62
16	40	52	54	31	35	20	38	27	15	53	43	122	7	7	0	75	100	0	33	41
17	42	19	26	38	38	61	15	30	9	33	64	132	5	10	18	Nil	Nil	12	24	45
18	39	46	47	24	31	45	31	15	17	40	51	82	3	6	0	150	150	0	23	46
19	39	70	56	22	47	34	28	13	3	38	39	98	8	0	0	Enc	40	21	29	54
20	42	22	40	33	36	30	19	31	24	35	67	102	0	7	0	Nil	Nil	0	30	56
21	43	40	65	19	43	29	12	16	4	60	38	124	12	0	18	Enc	LP	23	29	40
22	41	9	27	27	21	72	15	35	11	39	59	134	0	11	0	400	Nil	9	19	59
23	43	20	26	16	22	54	24	37	16	53	45	109	12	0	15	LP	100	0	23	59
24	33	24	39	25	37	45	20	16	21	51	46	71	5	0	0	350	200	0	21	51
25	40	25	39	25	33	45	18	19	21	31	81	79	0	5	0	400	350	0	28	94
26	42	31	54	34	34	54	8	18	9	43	59	115	0	12	0	LP	LP	0	24	65
27	37	42	63	25	36	37	25	20	10	39	47	78	7	0	0	800	LP	31	34	55
28	41	51	37	28	38	31	21	29	7	56	37	99	12	0	0	Nil	LP	18	27	55

29	41	12	33	29	34	79	18	23	16	46	43	132	4	12	16	Enc	Enc	10	27	66
30	30	33	35	22	24	48	21	15	19	36	60	119	0	10	0	Enc	200	0	25	45
31	38	28	59	24	30	44	16	12	15	61	44	110	5	12	0	200	200	0	24	56
32	41	34	21	15	32	67	15	15	14	74	41	126	10	0	18	400	400	27	35	47
33	40	37	51	27	29	53	24	20	7	41	47	113	0	11	0	400	400	0	18	43
34	42	36	19	18	30	37	23	22	21	74	36	95	12	0	18	80	80	9	26	51
35	44	26	46	37	34	51	18	16	1	63	52	106	8	8	0	Enc	Nil	20	22	64
36	41	40	57	25	27	28	28	21	8	42	54	112	2	11	0	400	400	0	19	47
37	37	20	57	23	28	56	19	14	6	60	51	96	8	0	0	800	800	0	25	44
38	41	62	59	16	43	23	29	21	3	50	46	113	12	0	0	150	200	0	28	45
39	38	50	54	23	62	25	27	24	20	34	30	107	9	0	0	LP	25	0	18	51
40	40	33	43	35	45	31	31	25	15	52	43	98	11	0	0	400	200	10	18	41
41	38	11	19	31	21	66	19	12	20	56	66	114	12	0	14	200	100	0	21	39
42	38	32	16	39	45	53	11	17	5	50	68	86	12	0	0	500	500	28	35	49
43	33	48	53	23	33	26	26	21	7	55	45	79	5	0	0	200	LP	20	26	56
44	39	47	40	26	42	30	18	16	23	52	44	113	8	12	0	Nil	LP	16	21	44
45	41	46	38	21	29	57	12	14	9	63	33	110	1	12	0	100	100	0	24	47
46	43	57	41	17	47	41	20	21	16	46	32	102	9	0	0	200	400	0	31	45
47	42	25	47	19	30	48	8	37	7	54	42	129	0	12	15	LP	LP	0	22	59
48	41	36	12	28	50	51	17	30	20	58	33	141	11	12	21	400	300	0	27	64
49	33	48	20	28	29	40	41	17	28	35	37	131	3	12	17	400	400	8	24	47
50	38	31	44	16	35	50	15	18	21	53	62	127	0	12	0	LP	LP	0	24	53
51	40	51	67	31	37	34	23	12	3	49	48	123	0	12	0	LP	75	0	31	47
52	38	38	44	31	44	52	16	19	25	34	47	107	0	12	0	Nil	Nil	0	20	80
53	38	66	59	15	33	40	17	26	13	30	45	101	3	12	0	50	70	0	20	47
54	36	23	37	35	37	42	25	25	7	33	71	99	5	4	0	70	75	0	29	45
55	41	47	58	25	29	25	39	15	6	49	42	91	8	0	0	40	40	0	19	53
56	41	36	54	39	50	48	11	13	24	27	43	136	12	0	14	Enc	200	0	20	58

57	38	62	55	20	30	40	15	17	7	52	45	104	10	0	0	200	Enc	17	33	44
58	41	42	49	20	39	42	24	20	9	51	39	69	3	0	0	LP	NIL	25	28	63
59	38	48	42	12	48	38	15	18	9	72	30	101	12	0	13	30	20	0	19	41
60	41	56	54	14	49	37	17	6	19	55	35	104	4	4	0	200	Enc	12	23	53
61	32	37	44	27	36	62	26	7	9	34	59	87	4	0	0	800	800	0	29	66
62	42	28	39	24	32	52	12	31	10	68	42	117	12	0	19	Enc	Enc	19	33	49
63	43	15	51	24	41	53	11	29	3	65	34	130	0	12	18	200	400	0	25	51
64	42	56	55	21	44	17	18	25	22	43	41	107	3	8	0	200	350	0	18	60
65	40	33	53	18	36	50	20	27	9	51	40	115	2	12	0	200	150	0	29	49
66	37	33	36	35	55	58	12	24	10	59	30	129	7	12	17	Nil	Nil	11	32	48
67	38	27	27	16	22	50	24	24	25	64	31	117	12	0	16	100	200	0	25	38
68	42	37	51	26	41	35	22	28	5	65	33	111	12	0	17	200	200	18	24	42
69	41	45	28	23	51	39	18	14	9	63	46	104	10	0	0	200	200	0	32	50
70	42	49	21	15	28	35	16	28	19	69	43	145	0	12	20	LP	LP	0	35	62
71	42	51	25	17	33	38	17	33	8	75	19	100	12	0	18	30	100	0	25	51
72	39	58	62	14	28	29	18	19	9	56	48	130	0	12	0	LP	LP	0	22	41
73	38	40	46	23	31	56	11	16	9	53	39	105	1	6	0	200	200	0	18	53
74	40	51	34	34	13	49	21	20	30	38	63	99	12	0	0	400	200	0	33	44
75	33	36	39	20	44	45	22	16	18	55	49	114	6	6	0	75	LP	0	24	53
76	35	37	42	30	43	36	22	10	7	52	69	106	12	0	0	LP	300	34	35	64
77	42	41	40	18	39	18	31	33	29	31	37	139	11	12	18	Nil	LP	16	26	52

Appendix E (continued)

Data Sheet
Sighted Subjects

No	V	O	Kuder Scales 1	2	3	4	5	6	7	8	9	Age	Edu	IQ	Test Time
1	41	23	30	15	16	60	35	14	29	43	55	26	12	114	52
2	38	61	47	31	49	30	20	21	8	55	33	22	12	99	45
3	39	17	52	10	30	60	25	19	22	57	34	24	16	111	48
4	41	60	34	20	26	30	22	26	18	35	63	25	17	129	56
5	37	37	13	30	51	59	15	27	14	50	51	20	15	106	59
6	38	45	40	36	60	28	42	5	2	51	44	22	12	122	36
7	37	37	42	40	37	34	24	26	11	37	54	22	15	114	57
8	42	20	56	40	53	24	23	11	21	37	46	24	13	112	58
9	38	64	58	29	32	42	20	14	10	40	44	20	13	112	43
10	42	47	39	33	48	30	22	20	10	62	32	22	14	124	58
11	41	25	23	48	28	38	16	16	23	62	63	28	12	101	52
12	38	37	32	48	46	42	11	23	12	39	71	27	16	102	42
13	40	36	39	28	39	44	19	22	10	44	50	25	12	124	37
14	42	48	39	37	35	34	16	16	6	51	66	25	16	107	47
15	43	27	45	29	53	40	20	21	7	53	45	19	12	104	46
16	38	41	49	34	31	55	18	17	10	39	47	22	9	109	43
17	38	37	52	33	35	43	36	15	12	32	43	20	13	100	48
18	42	45	27	25	50	39	33	33	14	34	41	22	13	121	47
19	39	60	56	28	48	17	18	10	17	61	33	26	15	129	64
20	43	58	32	22	50	44	11	16	7	54	37	20	15	109	43
21	38	14	25	29	30	52	34	41	24	18	46	25	16	129	46

22	42	51	54	28	48	17	28	21	9	56	43	25	12	107	46
23	38	63	33	34	33	41	27	20	8	53	36	31	10	103	50
24	39	28	44	28	26	47	23	24	6	62	39	24	15	103	49
25	41	23	30	12	26	62	19	24	19	73	42	32	14	101	52
26	39	60	49	8	32	33	29	20	22	53	23	26	18	114	49
27	34	55	66	28	56	26	18	15	7	32	39	24	14	111	53
28	40	45	21	30	36	44	20	24	10	50	60	24	15	115	43
29	39	43	32	36	50	52	20	28	20	26	44	18	12	108	50
30	37	19	34	24	46	35	28	22	14	46	45	25	10	74	50
31	41	56	59	19	34	40	23	14	5	51	31	27	14	112	47
32	43	20	48	33	48	36	22	18	16	49	44	23	14	124	49
33	38	27	42	38	34	44	25	20	12	39	51	23	11	103	39
34	41	57	41	29	40	28	26	35	21	41	22	24	14	120	50
35	35	43	45	21	45	48	24	18	8	34	51	19	11	98	47
36	39	48	35	30	48	24	15	25	8	57	52	20	12	80	45
37	41	50	55	20	50	43	25	13	2	50	41	26	12	118	43
38	41	48	47	16	40	24	46	17	6	60	31	25	14	112	50
39	40	64	45	21	33	36	32	19	11	40	41	19	12	116	39
40	37	36	33	33	36	40	32	24	22	39	47	19	9	100	48
41	39	50	52	27	41	37	15	14	11	67	41	28	12	118	50
42	37	41	44	35	38	48	23	14	7	37	79	18	12	99	40

43	42	42	51	26	49	24	33	19	7	39	64	19	13	103	53
44	41	24	33	35	41	73	16	26	10	34	50	20	12	127	44
45	41	44	59	27	46	28	14	19	8	70	36	21	8	99	40
46	37	31	39	23	42	29	23	24	7	59	43	20	9	104	52
47	36	33	38	26	33	48	22	13	18	47	52	21	9	93	51
48	37	47	54	20	42	44	25	23	6	35	36	27	7	88	52
49	36	44	51	27	50	27	21	14	10	56	41	25	12	102	50
50	41	46	21	33	45	42	26	16	12	31	77	30	12	120	49
51	36	35	57	24	46	31	19	13	5	54	44	20	13	113	52
52	39	46	40	22	37	28	46	23	15	44	23	24	14	110	50
53	38	32	53	19	37	46	18	16	16	46	56	20	12	77	47
54	31	48	52	17	31	46	20	18	17	48	22	21	15	99	46
55	37	65	56	24	66	23	34	14	6	40	33	18	12	116	54
56	42	35	31	47	51	35	17	24	21	35	58	20	14	95	52
57	41	38	27	25	32	38	22	35	19	28	47	20	15	109	49
58	42	26	29	32	35	37	22	34	18	56	53	22	12	95	43
59	43	14	44	37	56	44	20	28	14	32	48	20	15	104	59

Appendix F

Age, I.Q., and Educational Level

	Mean	Range
Sighted (Group A) N= 59		
Age	23.12	18-35
I.Q.	107.93	74-129
Education	12.86	7-18
Blind (Group B) N= 77		
Age	25.25	18-35
I.Q.	109.49	69-145
Education	11.60	3-21

Appendix G

Expressed Interests and Appropriate D.O.T. Job Titles and Agree-Disagree Status Between Measured and Expressed Interests

Sighted Subjects (Group A)

Note: The following subjects were judged to have expressed interests compatible with measured interests and are therefore classified as "Agree."

Agree

Case No

1 Manager of a motion picture theatre - Manager--Recreation establishment.

2 High school teacher; science - Teacher, high school.

3 President of General Motors - President.

5 Medical field or welfare work - Doctor of medicine.

6 I would like to have a traveling job like an artist - Artist.

7 C.P.A. - Public accountant.

8 I like to work with electronics - Electrical engineer. (E.E. major.)

9 Farmer - General farmer.

10 Electrical engineering. I love language too and I speak three - Electrical engineer.

11 Bookkeeper - Bookkeeper.

12 C.P.A. - Public accountant.

14 Accounting - Public accountant.

15 Electronic maintainence - Radio electrician.

17 Mechanical or architectual drawing; drafting in general - Mechanical draftsman.

18 Photography; photojournalism - News photographer.

19 Electrical engineering - Electrical engineer.

20 Anything working with a farm - General farmer.

21 I would like to write; preferably free-lance writing - Literary writer.

22 I like to work with mechanical things - Maintenance mechanic.

23 Truck driver; I love to travel - Truck driver.

24 I would like to do police work; possible in juvenile delinquency - Police officer.

25 Personnel counseling would be first choice -Personnel counselor.

26 Pastoral counseling - Clergyman.

27 Industrial production; I want to be a mechanical engineer - Mechanical engineer.

29 I would like to be a sports announcer - Radio sports announcer.

31 Teaching in a high school - Teacher, high school.

32 Electronics technician now. I plan to go back to college and major in electrical engineering - Electrical engineer.

33 Shipping clerk, I reckon - Shipping clerk.

37 Quality control in aircraft production of jets. I am working toward this in ceramic engineering at State - Ceramic engineer.

38 I'd rather be a missionary than anything else - Clergyman.

41 Some Christian church work - Clergyman.

42 Office work - General office clerk.

44 I like to work with people. I'd like to be a personnel manager - Personnel manager.

45 Diesel mechanics - Diesel mechanic.

48 Paper making; fifth hand - Paper reel operator.

50 Bookkeeping - Bookkeeper.

51 Industrial arts; furniture manufacturing - Furniture assembler.

52 Architecture - Architect.

53 Outside work; operate heavy machinery like a bulldozer - Bulldozer operator.

55 I guess machine repair - Maintenance mechanic.

56 I'd pick a job dealing with figures; accounting - Accounting clerk.

57 Actor - Actor.

59 Textile research - Chemical research engineer.

Disagree

Case No

4 Coaching; preferably basketball - Coach.

13 Barber - Barber.

16 I reckon it would be mechanics; auto - Auto mechanic.

28 Anything in business management; management in mechanical sales - Branch manager.

30 I'd like the air; test pilot - Pilot.

34 I'd like to be a teacher at a college and in the sciences - Teacher, college or university.

35 Sheet metal fabrication - Sheet metal fabricating machine operator.

36 Office work; shipping clerk work; bookkeeping - General office work.

39 Maintenance of heavy road equipment - Maintenance mechanic.

40 I like to lay floor tile of composition and linoleum - Floor layer.

43 Work in a plant kinda like Westinghouse; work with electric work - Electrical accessories assembler.

46 Most any kind of construction work; carpentry best - Carpenter.

47 I'd like to be a cop - Policeman.

49 Tractor trailer driver - Truck driver, heavy.

54 I would like to be a geologist; I like to travel with my work; probably collect things like for the Smithsonian Institute - Geologist.

58 Accounting - Accounting clerk.

Blind Subjects (Group B)

Agree

1 I'd like to be a principal - Principal.

2 Masseur - Masseur.

4 I'd like to have a band - Orchestra Leader.

5 Rehabilitation counselor for the blind - Vocational counselor.

7 Teaching; I like English pretty good - Teacher, high school.

8 Teach in psychology - Teacher, college or university.

9 Selling; probably insurance - Insurance salesman.

11 I'd rather be an engineer in radio and T.V. but blindness makes me turn to writing because I know I can do it - Literary writer.

12 Peanut selling - Sales person, general.

13 Piano tuning - Piano tuner.

15 Math teacher - Teacher, high school.

16 Mattress work - Mattress maker.

17 Practice law; trial practice - Lawyer.

19 Machine mechanic - Maintenance mechanic.

20 Secretarial typing or some sort of clerical work - Typist.

21 Rehabilitation counselor - Vocational counselor.

22 An executive in radio-television work - (Radio) station manager.

23 Announcing in radio - Radio announcer.

27 Automobile mechanic - Automobile mechanic.

29 Life insurance agent or salesman - Insurance salesman.

31 Teaching kids in a mattress shop - Teacher, vocational, high school.

32 Rehabilitation counselor - Vocational counselor.

33 Lawyer - Lawyer.

34 Psychiatric social worker - Psychiatric social worker.

35 Minister - Clergyman.

37 Radio announcing - Radio announcer.

38 Photography; free-lance - Photographer.

39 Radio repair and maintenance - Radio repairman.

41 Management; control between workers and owners - Labor relations specialist.

42 I would like to work for the blind - Caseworker aide.

44 Occupational therapy - Occupational therapist.

45 Working in a hospital as an assistant to a physical therapist - Physical therapist.

46 Farming - General farmer.

47 Continuity writer - Literary writer.

48 Teaching psychology; theoretical and experimental - Teacher, college or university.

49 Teach music, music theory and perform -, Professor of music.

50 Announcer and disc jockey in a radio station - Radio announcer.

51 Mechanical or electrical engineering - Mechanical engineer.

52 Piano tuning - Piano tuner.

53 Skilled laborer in construction or industry - Laborer, construction.

55 Mechanic; auto - Automobile mechanic.

57 Outdoor construction like road building; I like working with heavy machinery - Bulldozer operator.

59 I want to work with the blind; possibly in welfare - Caseworker.

60 Mechanics work - Maintenance mechanic.

62 Lawyer - Lawyer.

63 Rehabilitation counselor - Vocational counselor.

64 Electrical engineering - Electrical engineer.

65 An entertainer and actor - Actor.

66 Medical doctor - Physician.

67 Teach history and religion - Teacher, college or university.

68 Guidance counselor in secondary education - Vocational counselor.

69 Drug clerk - General sales person (drug).

70 Minister - Clergyman.

71 Rehabilitation counselor - Vocational counselor.

72 Occupational therapy - Occupational therapist.

73 Curb and table hopping for a restaurant - Waiter, informal.

75 Speech therapist - Teacher, defective speech.

77 Musician; performing, teaching, and composing - Professor of music.

Disagree

3 Warehouse worker - Warehouseman.

6 Social worker - Caseworker.

10 Any kind of factory work, working at some machine - General machine operator.

14 Knitting machine operator - Knitting machine operator.

18 I like store work; sell a few groceries, drinks, and cigarettes - Sales clerk.

26 Masseur - Masseur.

28 Stand operator - Sales clerk.

30 I would enjoy teaching sports better than anything, but it looks as though I'm going to be a hair stylist - Athletic coach.

36 Some form of social studies teaching - Teacher, high school.

40 I like to work in the school mattress shop - Mattress maker.

43 Farmer - General farmer.

54 I'd like to work as a machine operator in a mattress plant - Mattress maker.

56 Run my own mail order general merchandise business - Manager, retail general merchandise.

58 Auto mechanic - Automobile mechanic.

61 I would like farm work with animals - Farm hand, livestock.

74 Farmer - General farmer.

76 Some light work; filling station work - Filling station attendant.

Unclassifiable

24 Ain't never had no special thing. (Could not be persuaded to state a preference.)

25 Anything. I'd like to work with people. (Refused to elaborate.)

Appendix H

Medical Diagnoses of Eye Conditions

Note: The following diagnostic statements of eye conditions were copied directly from medical eye reports in the files of the North Carolina State Commission for the Blind. These file copies were at times original reports written in long-hand by the physician himself, or were typed copies earlier transcribed from hand written originals. No attempt has been made to correct spelling errors appearing on these eye reports.

Case No	
1	OS Disseminated choriditis; OD choriditis.
2	Agropic globes.
3	Congenital nystagmus.
4	Diabetic cataracts, OU.
5	Bilateral familial macula degeneration. Punctate corneal scars OS.
6	Congenital cateract - Right. Hyperopic eyes.
7	Albino - Retinal atrophy.
8	Chorioretinitis - Nystagmus.
9	Optic atrophy.
10	Surgical aphakia OU.
11	Phthisis bulib, right eye; retinitis pigmentoa left eye, myopia left eye.
12	Retinitis pigmentosa OU.
13	Post-op. cat. OD, cat. OS - aniridia OU.
14	Post-op. aphakia OU.
15	Hemenopsia, right. Post-traumatic.
16	Nystagmus congenital: myopia, progressive, marked: fusion weakness.
17	Physical trauma, enucleation OU.

18 Constant searching nystagmus.

19 Surgical anopthalmos, OD. Surgical aphika OS. Traumatic iridodialysis; corneal scars OS.

20 Consanguinity, Keratitis in infancy.

21 OD, surgical anophthalmus OS old detached retina (post operative).

22 OD optic atrophy; OS optic atrophy complete.

23 Myopia.

24 Congenital cateract OU.

25 Optic atrophy - nystagmus.

26 Neuro-retinal atrophy - conical cornea.

27 Bilateral optic atrophy.

28 Hemangiomatosis, OD. Retinal detachment OS.

29 Disorganized globes.

30 Surgical anophthalmos OD, Corneal leukoma OS, anterior synechiae, nystagmus.

31 Blind, retinitis pigmentosa OU.

32 Chorio-retinitis.

33 Bilateral congenital cateracts.

34 Macular degeneration.

35 Mucous membrane ectropion lower rt lid.

36 Nystagmus and hyperopic astigmatism.

37 Retinitis pigmentosa.

38 Nystagmus. Cong. Bil. 2 astig. mixed bil.

39 Bilateral surgical aplopsia, for congenital cataracts.

40 Juvenile diabetis. Cateract OU (diabetic).

41 Refraction - Marked nystagma - disks appear pale.

42 Diabetes mellitus with retinopathy, neuropathy are present.

43 One. Retinal folds right eye, with macular edemaand atrophy secondary to retinal separation. Two. Esotropia with suppression amblyopia OS.

44 OD Optic atrophy. OS Atrophic globe.

45 Congenital cataracts.

46 Choroiditis, with gross systagmus.

47 Optic atrophy..

48 Macular retinitis OU.

49 Retinal degeneration.

50 Micropthalmas cataract; posterior direare.

51 Congenital cataracts, congenital amblyopia.

52 Congenital anopthalmas with very narrow palpebal fissures and shallow sockets.

53 High hyperopia, congenital amblyopia, nystagmus.

54 Aphakia, atrophy nerves.

55 High myopia, early digeneration of retina, lateral mystagmus.

56 Phthisis bulbi, RE; nystagmus; congenital LE; band keratitis LE.

57 Centrl chorioretinitis rt. Left removed.

58 Traumatic cataract OS, posterior and anterior synechia, complete OD with vitreous floaters, searching nystagmus.

59 Optic atrophy bilateral.

60 Absence of eye, acquired OS; OD chorioretinitis scarring.

61 Bilateral macular degeneration familial.

62 Surg. anophthalmos OD. Phthesis bulbi secondary.

63 Fine tremulous nystagmous congenital.

64 Horizontal and pend. nystagmus, amblyopia, myopic astigmatism.

65 Albinism.

66 Degenerated fundi - Left cataract; left degenerated globe.

67 Albinism, lens opacities.

68 Myopic degeneration of retina, both eyes; right esotropia. High myopia.

69 Congenital nystagmus both eyes.

70 Congenital.

71 Retinitis pigmentosa.

72 Choria, retinal degeneration OU.

73 Congenital nystagmus.

74 Panus of left superior rectus. Overation of right inferior oblique, bilaterial amblyopia.

75 Nystagmus chorio retinal scars.

76 Diabetes, severe, poorly controlled, OD, post cataract extraction, endothelial and epithelial distrophy; OS immature cataract.

77 Conjunctival badly burned - extensive opacifications of cornea.

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BIOGRAPHY

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